

Safety Data Sheet
acc. to OSHA HCS

Printing date 05/05/2021

Reviewed on 05/05/2021

1 Identification

- **Product identifier**
- **Trade name:** Uranium from Uranyl Nitrate 50000 µg/mL in 5% HNO₃
- **Article number:** 50M64-1D
- **Details of the supplier of the safety data sheet**
- **Manufacturer/Supplier:**
High-Purity Standards
7221 Investment Drive, North Charleston, SC 29418 United States
Telephone: +1-843-767-7900
Fax: +1-843-767-7906
highpuritystandards.com
Email: info@highpuritystandards.com
- **Information department:** Product safety department
- **Emergency telephone number:**
INFOTRAC
Emergency telephone numbers 1-800-535-5053
Other emergency telephone numbers 1-352-323-3500

2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS06 Skull and crossbones

Acute Tox. 3 H301 Toxic if swallowed.

Acute Tox. 2 H330 Fatal if inhaled.



GHS08 Health hazard

STOT RE 2 H373 May cause damage to organs through prolonged or repeated exposure.



GHS05 Corrosion

Met. Corr. 1 H290 May be corrosive to metals.

Skin Corr. 1A H314 Causes severe skin burns and eye damage.

Eye Dam. 1 H318 Causes serious eye damage.

- **Label elements**
- **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

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· Hazard pictograms**· Signal word** *Danger***· Hazard-determining components of labeling:***uranyl nitrate, hexahydrate
nitric acid***· Hazard statements***H290 May be corrosive to metals.
H301 Toxic if swallowed.
H330 Fatal if inhaled.
H314 Causes severe skin burns and eye damage.
H373 May cause damage to organs through prolonged or repeated exposure.***· Precautionary statements***Keep only in original container.
Do not breathe dusts or mists.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.
[In case of inadequate ventilation] wear respiratory protection.
If swallowed: Immediately call a poison center/doctor.
If swallowed: Rinse mouth. Do NOT induce vomiting.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
Get medical advice/attention if you feel unwell.
Specific treatment is urgent (see on this label).
Wash contaminated clothing before reuse.
Absorb spillage to prevent material damage.
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.
Store in corrosive resistant container with a resistant inner liner.
Dispose of contents/container in accordance with local/regional/national/international regulations.***· Classification system:****· NFPA ratings (scale 0 - 4)**

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· HMIS-ratings (scale 0 - 4)

| | | |
|------------|---|----------------|
| HEALTH | 3 | Health = 3 |
| FIRE | 0 | Fire = 0 |
| REACTIVITY | 0 | Reactivity = 0 |

- **Other hazards**
- **Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.

3 Composition/information on ingredients

- **Chemical characterization: Mixtures**
- **Description:** Mixture of the substances listed below with nonhazardous additions.

· Dangerous components:

| | | |
|------------|-----------------------------|------|
| 7697-37-2 | nitric acid | 5.0% |
| 13520-83-7 | uranyl nitrate, hexahydrate | 5.0% |

· Chemical identification of the substance/preparation

| | | |
|-----------|---|-------|
| 7732-18-5 | water, distilled, conductivity or of similar purity | 90.0% |
|-----------|---|-------|

4 First-aid measures

- **Description of first aid measures**
- **General information:**
 - Immediately remove any clothing soiled by the product.
 - Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
 - Remove breathing apparatus only after contaminated clothing have been completely removed.
 - In case of irregular breathing or respiratory arrest provide artificial respiration.
- **After inhalation:**
 - Supply fresh air or oxygen; call for doctor.
 - In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.
- **After swallowing:**
 - Do not induce vomiting; immediately call for medical help.
 - Drink copious amounts of water and provide fresh air. Immediately call a doctor.
- **Information for doctor:**
 - Most important symptoms and effects, both acute and delayed** No further relevant information available.
 - Indication of any immediate medical attention and special treatment needed** No further relevant information available.

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5 Fire-fighting measures

- **Extinguishing media**
- **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.
- **Special hazards arising from the substance or mixture**
During heating or in case of fire poisonous gases are produced.
- **Advice for firefighters**
- **Protective equipment:** Mouth respiratory protective device.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
Mount respiratory protective device.
Wear protective equipment. Keep unprotected persons away.
- **Environmental precautions:**
Dilute with plenty of water.
Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Use neutralizing agent.
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.
- **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.
- **Protective Action Criteria for Chemicals**

· PAC-1:

| | | |
|------------|-----------------------------|-----------------------|
| 7697-37-2 | nitric acid | 0.16 ppm |
| 13520-83-7 | uranyl nitrate, hexahydrate | 1.3 mg/m ³ |

· PAC-2:

| | | |
|------------|-----------------------------|---------------------|
| 7697-37-2 | nitric acid | 24 ppm |
| 13520-83-7 | uranyl nitrate, hexahydrate | 7 mg/m ³ |

· PAC-3:

| | | |
|------------|-----------------------------|----------------------|
| 7697-37-2 | nitric acid | 92 ppm |
| 13520-83-7 | uranyl nitrate, hexahydrate | 42 mg/m ³ |

7 Handling and storage

- **Handling:**
- **Precautions for safe handling**
Ensure good ventilation/exhaustion at the workplace.

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- Open and handle receptacle with care.
- Prevent formation of aerosols.
- **Information about protection against explosions and fires:** Keep respiratory protective device available.
- **Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:** No special requirements.
- **Information about storage in one common storage facility:** Not required.
- **Further information about storage conditions:** Keep receptacle tightly sealed.
- **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Additional information about design of technical systems:** No further data; see item 7.
- **Control parameters**
- **Components with limit values that require monitoring at the workplace:**
The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit.
At this time, the remaining constituent has no known exposure limits.

7697-37-2 nitric acid

| | |
|-----|--|
| PEL | Long-term value: 5 mg/m ³ , 2 ppm |
| REL | Short-term value: 10 mg/m ³ , 4 ppm |
| | Long-term value: 5 mg/m ³ , 2 ppm |
| TLV | Short-term value: 10 mg/m ³ , 4 ppm |
| | Long-term value: 5.2 mg/m ³ , 2 ppm |

- **Additional information:** The lists that were valid during the creation were used as basis.
- **Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Store protective clothing separately.
Avoid contact with the eyes.
Avoid contact with the eyes and skin.
- **Breathing equipment:**
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.
- **Protection of hands:**



Protective gloves

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The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· **Penetration time of glove material**

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye protection:**



Tightly sealed goggles

9 Physical and chemical properties

· **Information on basic physical and chemical properties**

· **General Information**

· **Appearance:**

| | |
|-----------------|-----------------|
| Form: | Liquid |
| Color: | colorless |
| Odor: | Characteristic |
| Odor threshold: | Not determined. |

| | |
|-----------|-----------------|
| pH-value: | Not determined. |
|-----------|-----------------|

· **Change in condition**

| | |
|------------------------------|------------------|
| Melting point/Melting range: | Undetermined. |
| Boiling point/Boiling range: | 83 °C (181.4 °F) |

| | |
|--------------|-----------------|
| Flash point: | Not applicable. |
|--------------|-----------------|

| | |
|--------------------------------|-----------------|
| Flammability (solid, gaseous): | Not applicable. |
|--------------------------------|-----------------|

| | |
|----------------------------|-----------------|
| Decomposition temperature: | Not determined. |
|----------------------------|-----------------|

| | |
|----------------|------------------------------|
| Auto igniting: | Product is not selfigniting. |
|----------------|------------------------------|

| | |
|----------------------|---|
| Danger of explosion: | Product does not present an explosion hazard. |
|----------------------|---|

· **Explosion limits:**

| | |
|--------|-----------------|
| Lower: | Not determined. |
| Upper: | Not determined. |

| | |
|----------------------------------|---------------------|
| Vapor pressure at 20 °C (68 °F): | 23 hPa (17.3 mm Hg) |
|----------------------------------|---------------------|

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| | |
|---|--|
| · Density at 20 °C (68 °F): | 1.1155 g/cm ³ (9.30885 lbs/gal) |
| · Bulk density: | 1,050 kg/m ³ |
| · Relative density | Not determined. |
| · Vapor density | Not determined. |
| · Evaporation rate | Not determined. |
| · Solubility in / Miscibility with Water: | Fully miscible. |
| · Partition coefficient (n-octanol/water): | Not determined. |
| · Viscosity: | |
| Dynamic: | Not determined. |
| Kinematic: | Not determined. |
| · Solvent content: | |
| Water: | 90.0 % |
| VOC content: | 0.00 % |
| | 0.0 g/l / 0.00 lb/gal |
| · Solids content: | 5.0 % |
| · Other information | No further relevant information available. |

10 Stability and reactivity

- **Reactivity** No further relevant information available.
- **Chemical stability**
- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** No further relevant information available.
- **Hazardous decomposition products:** No dangerous decomposition products known.

11 Toxicological information

- **Information on toxicological effects**
- **Acute toxicity:**
- **Primary irritant effect:**
- **on the skin:** Strong caustic effect on skin and mucous membranes.
- **on the eye:**
- Strong caustic effect.
- Strong irritant with the danger of severe eye injury.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**
- The product shows the following dangers according to internally approved calculation methods for preparations:
- Toxic

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Corrosive

Irritant

Very toxic

Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer)**

None of the ingredients is listed.

· **NTP (National Toxicology Program)**

None of the ingredients is listed.

· **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

12 Ecological information

· **Toxicity**

· **Aquatic toxicity:** No further relevant information available.

· **Persistence and degradability** No further relevant information available.

· **Behavior in environmental systems:**

· **Bioaccumulative potential** No further relevant information available.

· **Mobility in soil** No further relevant information available.

· **Additional ecological information:**

· **General notes:**

Water hazard class 2 (Self-assessment): hazardous for water

Do not allow product to reach ground water, water course or sewage system.

Must not reach bodies of water or drainage ditch undiluted or unneutralized.

Danger to drinking water if even small quantities leak into the ground.

· **Results of PBT and vPvB assessment**

· **PBT:** Not applicable.

· **vPvB:** Not applicable.

· **Other adverse effects** No further relevant information available.

13 Disposal considerations

· **Waste treatment methods**

· **Recommendation:**

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

· **Uncleaned packagings:**

· **Recommendation:** Disposal must be made according to official regulations.

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· **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

· **UN-Number**

· **DOT, ADR, IMDG, IATA**

UN3289

· **UN proper shipping name**

· **DOT**

Toxic liquid, corrosive, inorganic, n.o.s. (URANYL NITRATE HEXAHYDRATE SOLUTION, Nitric acid)

· **ADR**

3289 TOXIC LIQUID, CORROSIVE, INORGANIC, N.O.S. (uranyl nitrate, hexahydrate, NITRIC ACID)

· **IMDG, IATA**

TOXIC LIQUID, CORROSIVE, INORGANIC, N.O.S. (uranyl nitrate, hexahydrate, NITRIC ACID)

· **Transport hazard class(es)**

· **DOT**

· **Class**

6.1 Toxic substances

· **Label**

6.1, 8

· **ADR**

· **Class**

6.1 (TC3) Toxic substances

· **Label**

6.1+8

· **IMDG**

· **Class**

6.1 Toxic substances

· **Label**

6.1/8

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· IATA


· **Class** 6.1 Toxic substances
 · **Label** 6.1 (8)

· **Packing group**
 · **DOT, ADR, IMDG, IATA** II

· **Environmental hazards:** Not applicable.

· **Special precautions for user** Warning: Toxic substances
 · **Hazard identification number (Kemler code):** 68
 · **EMS Number:** F-A,S-B
 · **Segregation groups** Strong acids
 · **Stowage Category** B
 · **Stowage Code** SW2 Clear of living quarters.

· **Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** Not applicable.

· Transport/Additional information:

· **DOT**
 · **Quantity limitations** On passenger aircraft/rail: 1 L
 On cargo aircraft only: 30 L

· **ADR**
 · **Excepted quantities (EQ)** Code: E4
 Maximum net quantity per inner packaging: 1 ml
 Maximum net quantity per outer packaging: 500 ml

· **IMDG**
 · **Limited quantities (LQ)** 100 ml
 · **Excepted quantities (EQ)** Code: E4
 Maximum net quantity per inner packaging: 1 ml
 Maximum net quantity per outer packaging: 500 ml

· **UN "Model Regulation":** UN 3289 TOXIC LIQUID, CORROSIVE, INORGANIC, N.O.S. (URANYL NITRATE, HEXAHYDRATE, NITRIC ACID), 6.1 (8), II

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15 Regulatory information

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

· **Sara**

· **Section 355 (extremely hazardous substances):**

| | |
|-----------|-------------|
| 7697-37-2 | nitric acid |
|-----------|-------------|

· **Section 313 (Specific toxic chemical listings):**

| | |
|-----------|-------------|
| 7697-37-2 | nitric acid |
|-----------|-------------|

· **TSCA (Toxic Substances Control Act):**

| | | |
|-----------|---|--------|
| 7732-18-5 | water, distilled, conductivity or of similar purity | ACTIVE |
|-----------|---|--------|

| | | |
|-----------|-------------|--------|
| 7697-37-2 | nitric acid | ACTIVE |
|-----------|-------------|--------|

· **Hazardous Air Pollutants**

None of the ingredients is listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.

· **Chemicals known to cause developmental toxicity:**

None of the ingredients is listed.

· **Carcinogenic categories**

· **EPA (Environmental Protection Agency)**

None of the ingredients is listed.

· **TLV (Threshold Limit Value established by ACGIH)**

| | | |
|------------|-----------------------------|----|
| 13520-83-7 | uranyl nitrate, hexahydrate | AI |
|------------|-----------------------------|----|

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

| | |
|------------|-----------------------------|
| 13520-83-7 | uranyl nitrate, hexahydrate |
|------------|-----------------------------|

· **GHS label elements** The product is classified and labeled according to the Globally Harmonized System (GHS).

· **Hazard pictograms**



GHS05 GHS06 GHS08

· **Signal word** Danger

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· Hazard-determining components of labeling:

uranyl nitrate, hexahydrate
nitric acid

· Hazard statements

H290 May be corrosive to metals.
H301 Toxic if swallowed.
H330 Fatal if inhaled.
H314 Causes severe skin burns and eye damage.
H373 May cause damage to organs through prolonged or repeated exposure.

· Precautionary statements

Keep only in original container.
Do not breathe dusts or mists.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Wear protective gloves/protective clothing/eye protection/face protection.
[In case of inadequate ventilation] wear respiratory protection.
If swallowed: Immediately call a poison center/doctor.
If swallowed: Rinse mouth. Do NOT induce vomiting.
If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.
Continue rinsing.
Get medical advice/attention if you feel unwell.
Specific treatment is urgent (see on this label).
Wash contaminated clothing before reuse.
Absorb spillage to prevent material damage.
Store in a well-ventilated place. Keep container tightly closed.
Store locked up.
Store in corrosive resistant container with a resistant inner liner.
Dispose of contents/container in accordance with local/regional/national/international regulations.

· Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· Department issuing SDS: Environment protection department.

· Contact:

High-Purity Standards
Tel: 843-767-7900
Fax: 843-767-7906

· Date of preparation / last revision 05/05/2021 / -

· Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods

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DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
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)
VOC: Volatile Organic Compounds (USA, EU)
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
NIOSH: National Institute for Occupational Safety
OSHA: Occupational Safety & Health
TLV: Threshold Limit Value
PEL: Permissible Exposure Limit
REL: Recommended Exposure Limit
Met. Corr. 1: Corrosive to metals – Category 1
Acute Tox. 3: Acute toxicity – Category 3
Acute Tox. 2: Acute toxicity – Category 2
Skin Corr. 1A: Skin corrosion/irritation – Category 1A
Eye Dam. 1: Serious eye damage/eye irritation – Category 1
STOT RE 2: Specific target organ toxicity (repeated exposure) – Category 2

US