

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form	: Substance
Substance name	: Silver Nitrate
CAS No	: 7761-88-8
Product code	: LC22500
Formula	: AgNO ₃
Synonyms	: lunar caustic / nitrate of silver / nitric acid silver salt / nitric acid silver(1+) salt / silver mononitrate / Silver nitrate / silver(I) nitrate / silver(I) salt nitric acid
BIG no	: 10282

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture	: Laboratory chemical Chemical intermediate Water treatment Oxidant Photographic chemical: component Cosmetic product: dyestuff
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1.3. Details of the supplier of the safety data sheet

LabChem Inc
Jackson's Pointe Commerce Park Building 1000, 1010 Jackson's Pointe Court
16063 Zelienople, PA - USA
T 412-826-5230 - F 724-473-0647
info@labchem.com - www.labchem.com

1.4. Emergency telephone number

Emergency number : CHEMTREC: 1-800-424-9300 or 011-703-527-3887

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification

Ox. Sol. 2	H272
Acute Tox. 4 (Oral)	H302
Skin Corr. 1B	H314
Eye Dam. 1	H318
Aquatic Acute 1	H400
Aquatic Chronic 1	H410

2.2. Label elements

GHS-US labelling

Hazard pictograms (GHS-US) :



Signal word (GHS-US) : Danger

Hazard statements (GHS-US) :

- H272 - May intensify fire; oxidiser
- H302 - Harmful if swallowed
- H314 - Causes severe skin burns and eye damage
- H318 - Causes serious eye damage
- H400 - Very toxic to aquatic life
- H410 - Very toxic to aquatic life with long lasting effects

Precautionary statements (GHS-US) :

- P210 - Keep away from heat, open flames, sparks. - No smoking
- P220 - Keep/Store away from combustible materials
- P221 - Take any precaution to avoid mixing with combustibles
- P260 - Do not breathe dust
- P264 - Wash exposed skin thoroughly after handling
- P270 - Do not eat, drink or smoke when using this product
- P273 - Avoid release to the environment
- P280 - Wear eye protection, face protection, protective gloves, protective clothing
- P301+P312 - IF SWALLOWED: call a POISON CENTER or doctor/physician if you feel unwell
- P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
- P303+P361+P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated

Silver Nitrate

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

clothing. Rinse skin with water/shower
P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER/doctor/...
P321 - Specific treatment (see Personal precautions on this label)
P330 - If swallowed, rinse mouth
P363 - Wash contaminated clothing before reuse
P370+P378 - In case of fire: Use carbon dioxide (CO₂), powder, alcohol-resistant foam for extinction
P391 - Collect spillage
P405 - Store locked up
P501 - Dispose of contents/container to comply with local, state and federal regulations

2.3. Other hazards

Other hazards not contributing to the classification : None.

2.4. Unknown acute toxicity (GHS US)

No data available

SECTION 3: Composition/information on ingredients

3.1. Substances

Substance type : Mono-constituent

Name	Product identifier	%	GHS-US classification
Silver Nitrate (Main constituent)	(CAS No) 7761-88-8	100	Ox. Sol. 2, H272 Acute Tox. 4 (Oral), H302 Skin Corr. 1B, H314 Eye Dam. 1, H318 Aquatic Acute 1, H400 Aquatic Chronic 1, H410

Full text of H-phrases: see section 16

3.2. Mixture

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital.

First-aid measures after inhalation : Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

First-aid measures after skin contact : Wash immediately with lots of water (15 minutes)/shower. Do not apply (chemical) neutralizing agents. Remove clothing while washing. Do not remove clothing if it sticks to the skin. Cover wounds with sterile bandage. Consult a doctor/medical service. If burned surface > 10%: take victim to hospital.

First-aid measures after eye contact : Rinse immediately with plenty of water for 15 minutes. Do not apply neutralizing agents. Take victim to an ophthalmologist.

First-aid measures after ingestion : Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Do not induce vomiting. Immediately consult a doctor/medical service. Doctor: administration of chemical antidote. Call Poison Information Centre (www.big.be/antigif.htm). Ingestion of large quantities: immediately to hospital.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation : AFTER INHALATION OF DUST: Dry/sore throat. Coughing. FOLLOWING SYMPTOMS MAY APPEAR LATER: Risk of lung oedema.

Symptoms/injuries after skin contact : Caustic burns/corrosion of the skin.

Symptoms/injuries after eye contact : Corrosion of the eye tissue. Permanent eye damage.

Symptoms/injuries after ingestion : AFTER ABSORPTION OF HIGH QUANTITIES: Burns to the gastric/intestinal mucosa. Vomiting. Abdominal pain. Diarrhoea. Shock. Dizziness. Low arterial pressure. Disturbances of consciousness. Cramps/uncontrolled muscular contractions. Respiratory collapse.

Chronic symptoms : ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: May stain the skin. Blue/grey discolouration of the skin. Inflammation/damage of the eye tissue. Visual disturbances. Possible inflammation of the respiratory tract.

4.3. Indication of any immediate medical attention and special treatment needed

Obtain medical assistance.

Silver Nitrate

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : EXTINGUISHING MEDIA FOR SURROUNDING FIRES: All extinguishing media allowed.
Unsuitable extinguishing media : No unsuitable extinguishing media known.

5.2. Special hazards arising from the substance or mixture

- Fire hazard : DIRECT FIRE HAZARD. Non combustible. INDIRECT FIRE HAZARD. Promotes combustion. Reactions involving a fire hazard: see "Reactivity Hazard".
Explosion hazard : INDIRECT EXPLOSION HAZARD. Reactions with explosion hazards: see "Reactivity Hazard".
Reactivity : On burning: release of toxic and corrosive gases/vapours (nitrous vapours). Decomposes on exposure to light. This reaction is accelerated on exposure to impurities. Violent to explosive reaction with many compounds e.g.: with (strong) reducers. Violent to explosive reaction with combustible materials: risk of spontaneous ignition.

5.3. Advice for firefighters

- Precautionary measures fire : Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: have neighbourhood close doors and windows.
Firefighting instructions : Cool tanks/drums with water spray/remove them into safety. Cool from behind cover/unmanned monitors. Dilute toxic gases with water spray. Take account of toxic fire-fighting water. Use water moderately and if possible collect or contain it.
Protection during firefighting : Heat/fire exposure: compressed air/oxygen apparatus.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Protective equipment : Gloves. Face-shield. Corrosion-proof suit. Dust cloud production: compressed air/oxygen apparatus.
Emergency procedures : Mark the danger area. Prevent dust cloud formation. No naked flames. Keep containers closed. Wash contaminated clothes. In case of hazardous reactions: keep upwind. In case of reactivity hazard: consider evacuation.
Measures in case of dust release : In case of dust production: keep upwind. In case of dust production: consider evacuation. Dust production: have neighbourhood close doors and windows.

6.1.2. For emergency responders

- Protective equipment : Equip cleanup crew with proper protection.
Emergency procedures : Ventilate area. Stop release.

6.2. Environmental precautions

Prevent soil and water pollution. Prevent spreading in sewers.

6.3. Methods and material for containment and cleaning up

- For containment : Contain released substance, pump into suitable containers. Consult "Material-handling" to select material of containers. Plug the leak, cut off the supply. Dam up the solid spill. Knock down/dilute dust cloud with water spray. Take account of toxic/corrosive precipitation water.
Methods for cleaning up : Prevent dispersion by covering with dry sand. Scoop solid spill into closing containers or synthetic bags. See "Material-handling" for suitable container materials. Carefully collect the spill/leftovers. Spill must not return in its original container. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling.

6.4. Reference to other sections

No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Keep the substance free from contamination. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Avoid raising dust. Keep away from naked flames/heat. Observe very strict hygiene - avoid contact. Keep container tightly closed. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection.
Hygiene measures : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

7.2. Conditions for safe storage, including any incompatibilities

- Incompatible products : Strong bases. combustible materials. Sodium hypochlorite.
Incompatible materials : combustible materials.
Heat and ignition sources : KEEP SUBSTANCE AWAY FROM: heat sources.

Silver Nitrate

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Prohibitions on mixed storage	: KEEP SUBSTANCE AWAY FROM: combustible materials. reducing agents. (strong) bases. organic materials. alcohols.
Storage area	: Store in a cool area. Store in a dry area. Store in a dark area. Keep container in a well-ventilated place. Keep locked up. Unauthorized persons are not admitted. Meet the legal requirements. Keep only in the original container.
Special rules on packaging	: SPECIAL REQUIREMENTS: closing. watertight. clean. opaque. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.
Packaging materials	: SUITABLE MATERIAL: iron. synthetic material.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Silver Nitrate (7761-88-8)		
USA ACGIH	ACGIH TWA (mg/m ³)	0.01 mg/m ³
USA OSHA	OSHA PEL (TWA) (mg/m ³)	0.01 mg/m ³

8.2. Exposure controls

Appropriate engineering controls	: Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.
Materials for protective clothing	: GIVE GOOD RESISTANCE: butyl rubber. neoprene. PVA.
Hand protection	: Gloves.
Eye protection	: Face shield. In case of dust production: protective goggles.
Skin and body protection	: Corrosion-proof clothing. In case of dust production: head/neck protection.
Respiratory protection	: Dust production: dust mask with filter type P3. High dust production: self-contained breathing apparatus.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Solid
Appearance	: Crystalline solid.
Molecular mass	: 169.87 g/mol
Colour	: Colourless to grey. On exposure to light: dark grey to black.
Odour	: Odourless.
Odour threshold	: No data available
pH	: 7.0
Relative evaporation rate (butylacetate=1)	: No data available
Melting point	: 212 °C
Freezing point	: No data available
Boiling point	: 444 °C
Flash point	: Not applicable
Self ignition temperature	: No data available
Decomposition temperature	: 444 °C
Flammability (solid, gas)	: No data available
Vapour pressure	: < 0.10 hPa
Relative vapour density at 20 °C	: 5.8
Relative density	: 4.3
Density	: 4352 kg/m ³
Solubility	: Soluble in water. Substance sinks in water. Soluble in ammonia. Soluble in glycerol. Water: 144 g/100ml Acetone: 0.40 g/100ml
Log Pow	: 0.19 (Estimated value)
Log Kow	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: No data available
Oxidising properties	: May intensify fire; oxidiser.
Explosive limits	: No data available

Silver Nitrate

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

9.2. Other information

VOC content : Not applicable
Other properties : Translucent. Substance has neutral reaction.

SECTION 10: Stability and reactivity

10.1. Reactivity

On burning: release of toxic and corrosive gases/vapours (nitrous vapours). Decomposes on exposure to light. This reaction is accelerated on exposure to impurities. Violent to explosive reaction with many compounds e.g.: with (strong) reducers. Violent to explosive reaction with combustible materials: risk of spontaneous ignition.

10.2. Chemical stability

Unstable on exposure to light.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

Direct sunlight. High temperature.

10.5. Incompatible materials

combustible materials. Strong bases. Strong reducing agents.

10.6. Hazardous decomposition products

Nitrogen oxides.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Harmful if swallowed.

Silver Nitrate (f)7761-88-8	
LD50 oral rat	1173 mg/kg (Rat)
Skin corrosion/irritation	: Causes severe skin burns and eye damage. pH: 7.0
Serious eye damage/irritation	: Causes serious eye damage. pH: 7.0
Respiratory or skin sensitisation	: Not classified
Germ cell mutagenicity	: Not classified
Carcinogenicity	: Not classified
Reproductive toxicity	: Not classified
Specific target organ toxicity (single exposure)	: Not classified
Specific target organ toxicity (repeated exposure)	: Not classified
Aspiration hazard	: Not classified
Symptoms/injuries after inhalation	: AFTER INHALATION OF DUST: Dry/sore throat. Coughing. FOLLOWING SYMPTOMS MAY APPEAR LATER: Risk of lung oedema.
Symptoms/injuries after skin contact	: Caustic burns/corrosion of the skin.
Symptoms/injuries after eye contact	: Corrosion of the eye tissue. Permanent eye damage.
Symptoms/injuries after ingestion	: AFTER ABSORPTION OF HIGH QUANTITIES: Burns to the gastric/intestinal mucosa. Vomiting. Abdominal pain. Diarrhoea. Shock. Dizziness. Low arterial pressure. Disturbances of consciousness. Cramps/uncontrolled muscular contractions. Respiratory collapse.
Chronic symptoms	: ON CONTINUOUS/REPEATED EXPOSURE/CONTACT: May stain the skin. Blue/grey discolouration of the skin. Inflammation/damage of the eye tissue. Visual disturbances. Possible inflammation of the respiratory tract.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Dangerous for the environment.
Ecology - water : Severe water pollutant (surface water). Maximum concentration in drinking water: 50 mg/l (nitrate) (Directive 98/83/EC). Highly toxic to fishes. Very toxic to invertebrates (Daphnia). Highly toxic to algae. May cause eutrophication.

Silver Nitrate (7761-88-8)	
LC50 fishes 1	0.0039 mg/l (96 h; Pimephales promelas; Flow-through system)
EC50 Daphnia 1	0.0006 mg/l (48 h; Daphnia magna; LOCOMOTOR EFFECT)
LC50 fish 2	0.006 mg/l 96 h; Salmo gairdneri (Oncorhynchus mykiss)

Silver Nitrate

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Silver Nitrate (7761-88-8)	
EC50 Daphnia 2	0.006 mg/l (48 h; Crangon sp.)
Threshold limit other aquatic organisms 1	0.006 mg/l (Pseudomonas putida; TOXICITY TEST)
Threshold limit algae 1	0.0007 mg/l (Microcystis aeruginosa; TOXICITY TEST)
Threshold limit algae 2	0.0095 mg/l (Scenedesmus quadricauda; TOXICITY TEST)

12.2. Persistence and degradability

Silver Nitrate (7761-88-8)	
Persistence and degradability	Biodegradability: not applicable.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable
BOD (% of ThOD)	Not applicable

12.3. Bioaccumulative potential

Silver Nitrate (7761-88-8)	
BCF fish 1	11 - 19 (Micropterus salmoides; CHRONIC)
BCF fish 2	15 - 150 (Lepomis macrochirus; CHRONIC)
Log Pow	0.19 (Estimated value)
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste disposal recommendations : Remove waste in accordance with local and/or national regulations. Recycle/reuse. Remove to an authorized dump (Class I).

Additional information : LWCA (the Netherlands): KGA category 06. Hazardous waste according to Directive 2008/98/EC.

SECTION 14: Transport information

In accordance with ADR / RID / ADNR / IMDG / ICAO / IATA

14.1. UN number

UN-No.(DOT) : 1493
DOT NA no. UN1493

14.2. UN proper shipping name

DOT Proper Shipping Name : Silver nitrate
Hazard labels (DOT) : 5.1 - Oxidizing substances



Packing group (DOT) : II - Medium Danger

Silver Nitrate

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

DOT Special Provisions (49 CFR 172.102)	: IB8 - Authorized IBCs: Metal (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N); Rigid plastics (11H1, 11H2, 21H1, 21H2, 31H1 and 31H2); Composite (11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2); Fiberboard (11G); Wooden (11C, 11D and 11F); Flexible (13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 or 13M2). IP2 - When IBCs other than metal or rigid plastics IBCs are used, they must be offered for transportation in a closed freight container or a closed transport vehicle. IP4 - Flexible, fiberboard or wooden IBCs must be sift-proof and water-resistant or be fitted with a sift-proof and water-resistant liner. T3 - 2.65 178.274(d)(2) Normal..... 178.275(d)(2) TP33 - The portable tank instruction assigned for this substance applies for granular and powdered solids and for solids which are filled and discharged at temperatures above their melting point which are cooled and transported as a solid mass. Solid substances transported or offered for transport above their melting point are authorized for transportation in portable tanks conforming to the provisions of portable tank instruction T4 for solid substances of packing group III or T7 for solid substances of packing group II, unless a tank with more stringent requirements for minimum shell thickness, maximum allowable working pressure, pressure-relief devices or bottom outlets are assigned in which case the more stringent tank instruction and special provisions shall apply. Filling limits must be in accordance with portable tank special provision TP3. Solids meeting the definition of an elevated temperature material must be transported in accordance with the applicable requirements of this subchapter.
DOT Packaging Exceptions (49 CFR 173.xxx)	: 152
DOT Packaging Non Bulk (49 CFR 173.xxx)	: 212
DOT Packaging Bulk (49 CFR 173.xxx)	: 242
Marine pollutant	: P



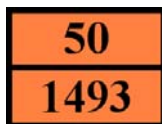
14.3. Additional information

Other information	: No supplementary information available.
State during transport (ADR-RID)	: as solid.

Overland transport

Packing group (ADR)	: II
Class (ADR)	: 5.1 - Oxidizing substances
Hazard identification number (Kemler No.)	: 50
Classification code (ADR)	: O2
Danger labels (ADR)	: 5.1 - Oxidizing substances



Orange plates	: 
Tunnel restriction code	: E

Transport by sea

DOT Vessel Stowage Location	: A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.
EmS-No. (1)	: F-A
EmS-No. (2)	: S-Q

Air transport

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27)	: 5 kg
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75)	: 25 kg

Silver Nitrate

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 15: Regulatory information

15.1. US Federal regulations

Silver Nitrate (7761-88-8)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

RQ (Reportable quantity, section 304 of EPA's List of Lists) : 1 lb

15.2. International regulations

CANADA

Silver Nitrate (7761-88-8)

Listed on the Canadian DSL (Domestic Substances List) inventory.

WHMIS Classification Class C - Oxidizing Material
Class E - Corrosive Material

EU-Regulations

No additional information available

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Ox. Sol. 2 H272

Skin Corr. 1B H314

Aquatic Acute 1 H400

Aquatic Chronic 1 H410

Full text of H-phrases: see section 16

Classification according to Directive 67/548/EEC or 1999/45/EC

O; R8

C; R34

N; R50/53

Full text of R-phrases: see section 16

15.2.2. National regulations

Silver Nitrate (7761-88-8)

Listed on the Canadian Ingredient Disclosure List

15.3. US State regulations

No additional information available

SECTION 16: Other information

Full text of H-phrases: see section 16:

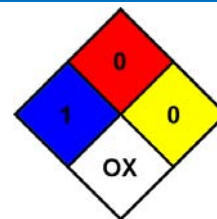
Acute Tox. 4 (Oral)	Acute toxicity (oral), Category 4
Aquatic Acute 1	Hazardous to the aquatic environment — Acute Hazard, Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment — Chronic Hazard, Category 1
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
Ox. Sol. 2	Oxidising Solids, Category 2
Skin Corr. 1B	Skin corrosion/irritation, Category 1B
H272	May intensify fire; oxidiser
H302	Harmful if swallowed
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage
H400	Very toxic to aquatic life
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Silver Nitrate

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

NFPA health hazard	: 1 - Exposure could cause irritation but only minor residual injury even if no treatment is given.
NFPA fire hazard	: 0 - Materials that will not burn.
NFPA reactivity	: 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.
NFPA specific hazard	: OX - This denotes an oxidizer, a chemical which can greatly increase the rate of combustion/fire.



HMIS III Rating

Health	: 2 Moderate Hazard - Temporary or minor injury may occur
Flammability	: 0 Minimal Hazard
Physical	: 0 Minimal Hazard
Personal Protection	: F

SDS US (GHS HazCom 2012)

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