

## SAFETY DATA SHEET

according to Regulation (EC) No. 453/2010

### TITRATION SOLUTION WITH SN 0.282N (52300, 52301, 52302, 52306)

Revision Date: 09-Jun-2015

Revision Number: 11

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

**1.1. Product Identifier**

**Product Name** TITRATION SOLUTION WITH SN 0.282N (52300, 52301, 52302, 52306)  
**Internal ID Code** HM004033

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

**Recommended Use** Titration Solution

**1.3. Details of the supplier of the safety data sheet**

Halliburton Energy Services  
 Halliburton House, Howemoss Place  
 Kirkhill Industrial Estate  
 Dyce  
 Aberdeen, AB21 0GN  
 United Kingdom

[www.halliburton.com](http://www.halliburton.com)

For further information, please contact

**E-Mail address:** [fdunexchem@halliburton.com](mailto:fdunexchem@halliburton.com)

**1.4. Emergency telephone number**

+44 8 08 189 0979 / 1-760-476-3961

Emergency telephone - §45 - (EC)1272/2008	
<b>Europe</b>	112
<b>Croatia</b>	Centar za kontrolu otrovanja (CKO): (+385 1) 23-48-342 (Poison Control Center (PCC) - Institute for Medical Research and Occupational Health)
<b>Cyprus</b>	+210 7793777
<b>Denmark</b>	Poison Control Hotline (DK): +45 82 12 12 12
<b>France</b>	ORFILA (FR): + 01 45 42 59 59
<b>Germany</b>	Poison Center Berlin (DE): +49 030 30686 790
<b>Italy</b>	Poison Center, Milan (IT): +39 02 6610 1029
<b>Netherlands</b>	National Poisons Information Center (NL): +31 30 274 88 88 (NB: this service is only available to health professionals)
<b>Norway</b>	Poisons Information (NO): + 47 22 591300
<b>Poland</b>	Poison Control and Information Centre, Warsaw (PL): +48 22 619 66 54; +48 22 619 08 97
<b>Romania</b>	+40 21 318 36 06
<b>Spain</b>	Poison Information Service (ES): +34 91 562 04 20
<b>United Kingdom</b>	NHS Direct (UK): +44 0845 46 47

#### SECTION 2: Hazards Identification

**2.1. Classification of the substance or mixture**

**REGULATION (EC) No 1272/2008**

Skin Corrosion / irritation	Category 2 - (H315)
Serious Eye Damage / Eye Irritation	Category 1 - (H318)
Acute Aquatic Toxicity	Acute 1 - (H400)
Chronic Aquatic Toxicity	Chronic 1 - (H410)

**2.2. Label Elements**

**Hazard Pictograms**



**Signal Word**

**Danger**

**Hazard Statements**

- H318 - Causes serious eye damage
- H315 - Causes skin irritation
- H400 - Very toxic to aquatic life
- H410 - Very toxic to aquatic life with long lasting effects

**Precautionary Statements - EU (§28, 1272/2008)**

- P280 - Wear eye protection/face protection
- P302 + P352 - IF ON SKIN: Wash with plenty of soap and water
- P332 + P313 - If skin irritation occurs: Get medical advice/attention
- 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 or doctor/physician
- P273 - Avoid release to the environment

**Contains**

**Substances**  
Silver nitrate

**CAS Number**  
7761-88-8

**2.3. Other Hazards**

None known

**SECTION 3: Composition/information on Ingredients**

**3.2. Mixtures**

Mixture

Substances	EINECS	CAS Number	PERCENT (w/w)	EU - CLP Substance Classification	REACH No.
Silver nitrate	231-853-9	7761-88-8	1 - 5%	Skin Corr. 1B (H314) Eye Corr. 1 (H318) Aquatic Acute 1 (H400) Aquatic Chronic 1 (H410) Ox. Sol. 1 (H271) Met. Corr. 1 (H290)	No data available

**For the full text of the H-phrases mentioned in this Section, see Section 16**

**SECTION 4: First aid measures**

**4.1. Description of first aid measures**

- Inhalation** If inhaled, move victim to fresh air and seek medical attention.
- Eyes** Immediately flush eyes with large amounts of water for at least 30 minutes. Seek prompt medical attention.
- Skin** In case of contact, immediately flush skin with plenty of soap and water for at least 15 minutes. Get medical attention. Remove contaminated clothing and launder before reuse.
- Ingestion** Do NOT induce vomiting. Give nothing by mouth. Obtain immediate medical

attention.

**4.2. Most Important symptoms and effects, both acute and delayed**

Causes severe eye irritation which may damage tissue. Causes skin irritation.

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

**Notes to Physician** Treat symptomatically

**SECTION 5: Firefighting Measures**

**5.1. Extinguishing media**

**Suitable Extinguishing Media**

Water mist, Foam.

**Extinguishing media which must not be used for safety reasons**

Do not use dry chemical or carbon dioxide extinguishers.

**5.2. Special hazards arising from the substance or mixture**

**Special Exposure Hazards**

Decomposition in fire may produce harmful gases.

**5.3. Advice for firefighters**

**Special Protective Equipment for Fire-Fighters**

Full protective clothing and approved self-contained breathing apparatus required for fire fighting personnel.

**SECTION 6: Accidental release measures**

**6.1. Personal precautions, protective equipment and emergency procedures**

Use appropriate protective equipment.  
See Section 8 for additional information

**6.2. Environmental precautions**

Prevent from entering sewers, waterways, or low areas.

**6.3. Methods and material for containment and cleaning up**

Isolate spill and stop leak where safe. Contain spill with sand or other inert materials. Scoop up and remove.

**6.4. Reference to other sections**

See Section 8 and 13 for additional information.

**SECTION 7: Handling and Storage**

**7.1. Precautions for Safe Handling**

Avoid contact with eyes, skin, or clothing. Wash hands after use. Launder contaminated clothing before reuse.

**Hygiene Measures**

Handle in accordance with good industrial hygiene and safety practice.

**7.2. Conditions for safe storage, including any incompatibilities**

Store away from direct sunlight.

**7.3. Specific End Use(s)**

**Exposure Scenario** No information available

**Other Guidelines** No information available

**SECTION 8: Exposure Controls/Personal Protection**

**8.1. Control parameters**

**Exposure Limits**

Substances	CAS Number	EU	UK	Netherlands	France
Silver nitrate	7761-88-8	TWA: 0.01 mg/m <sup>3</sup>	0.01 mg/m <sup>3</sup>	0,01 mg/m <sup>3</sup>	0.01 mg/m <sup>3</sup>

Substances	CAS Number	Germany	Spain	Portugal	Finland
Silver nitrate	7761-88-8	0,01 mg/m <sup>3</sup>	TWA: 0.01 mg/m <sup>3</sup>	TWA: 0.01 mg/m <sup>3</sup>	TWA: 0.01 mg/m <sup>3</sup> STEL: 0.03 mg/m <sup>3</sup>

Substances	CAS Number	Austria	Ireland	Switzerland	Norway
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Silver nitrate	7761-88-8	TWA: 0.01 mg/m <sup>3</sup>	0.01 mg/m <sup>3</sup> TWA (as Ag)	Not applicable	TWA: 0.01 mg/m <sup>3</sup> STEL: 0.03 mg/m <sup>3</sup>
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Substances	CAS Number	Italy	Poland	Hungary	Czech Republic
Silver nitrate	7761-88-8	0.01 mg/m <sup>3</sup>	0.01 mg/m <sup>3</sup>	0.01 mg/m <sup>3</sup>	0.01 mg/m <sup>3</sup>

Substances	CAS Number	Denmark	Romania	Croatia	Cyprus
Silver nitrate	7761-88-8	0.01 mg/m <sup>3</sup>	Not applicable	Not applicable	Not applicable

**Derived No Effect Level (DNEL) Worker** No information available.

**General Population**

**Predicted No Effect Concentration (PNEC)** No information available.

**8.2. Exposure controls**

**Engineering Controls** Use in a well ventilated area.

**Personal protective equipment**

If engineering controls and work practices cannot prevent excessive exposures, the selection and proper use of personal protective equipment should be determined by an industrial hygienist or other qualified professional based on the specific application of this product.

- Respiratory Protection** HEPA Respirator.
- Hand Protection** Impervious rubber gloves.
- Skin Protection** Rubber apron.
- Eye Protection** Chemical goggles; also wear a face shield if splashing hazard exists.
- Other Precautions** Eyewash fountains and safety showers must be easily accessible.

**Environmental Exposure Controls** No information available

**SECTION 9: Physical and Chemical Properties**

**9.1. Information on basic physical and chemical properties**

**Physical State:** Liquid **Color:** Clear colorless  
**Odor:** Odorless **Odor Threshold:** No information available

Property	Values
Remarks/ - Method	
<b>pH:</b>	No data available
<b>Freezing Point/Range</b>	No data available
<b>Melting Point/Range</b>	No data available
<b>Boiling Point/Range</b>	No data available
<b>Flash Point</b>	No data available
<b>Flammability (solid, gas)</b>	No data available
upper flammability limit	No data available
lower flammability limit	No data available
<b>Evaporation rate</b>	No data available
<b>Vapor Pressure</b>	No data available
<b>Vapor Density</b>	No data available
<b>Specific Gravity</b>	1
<b>Water Solubility</b>	Soluble in water
<b>Solubility in other solvents</b>	No data available
<b>Partition coefficient: n-octanol/water</b>	No data available
<b>Autoignition Temperature</b>	No data available
<b>Decomposition Temperature</b>	No data available
<b>Viscosity</b>	No data available
<b>Explosive Properties</b>	No information available
<b>Oxidizing Properties</b>	No information available

**9.2. Other information**

**VOC Content (%)** No data available

**SECTION 10: Stability and Reactivity**

**10.1. Reactivity**

Not expected to be reactive.

**10.2. Chemical Stability**

Stable

**10.3. Possibility of Hazardous Reactions**

Will Not Occur

**10.4. Conditions to Avoid**

Avoid contact with sunlight. Keep away from heat, sparks and flame.

**10.5. Incompatible Materials**

Strong alkalis. Reducing agents. Contact with ammonia. Carbonates of alkalis. Halogenated compounds. Iron salts. Combustible materials.

**10.6. Hazardous Decomposition Products**

Oxides of nitrogen. Toxic metal fumes.

**SECTION 11: Toxicological Information****11.1. Information on Toxicological Effects****Acute Toxicity****Inhalation**

May cause respiratory irritation. May cause coughing, wheezing, shortness of breath, nausea and vomiting.

**Eye Contact**

Causes severe eye irritation.

**Skin Contact**

Causes skin irritation.

**Ingestion**

Irritation of the mouth, throat, and stomach. May cause abdominal pain, vomiting, nausea, and diarrhea. May cause discoloration of the skin.

**Chronic Effects/Carcinogenicity**

Prolonged or repeated inhalation, application or ingestion of silver compounds may cause a permanent discoloration of the skin, eyes and mucous membranes.

**Toxicology data for the components**

Substances	CAS Number	LD50 Oral	LD50 Dermal	LC50 Inhalation
Silver nitrate	7761-88-8	1173 mg/kg (Rat) > 5000 mg/kg (Rat) (similar substance)	No data available	No data available

Substances	CAS Number	Skin corrosion/irritation
Silver nitrate	7761-88-8	Corrosive to skin

Substances	CAS Number	Eye damage/irritation
Silver nitrate	7761-88-8	Causes severe eye irritation.

Substances	CAS Number	Skin Sensitization
Silver nitrate	7761-88-8	Did not cause sensitization on laboratory animals (similar substances)

Substances	CAS Number	Respiratory Sensitization
Silver nitrate	7761-88-8	No information available

Substances	CAS Number	Mutagenic Effects
Silver nitrate	7761-88-8	Not regarded as mutagenic. (similar substances)

Substances	CAS Number	Carcinogenic Effects
Silver nitrate	7761-88-8	No information available.

Substances	CAS Number	Reproductive toxicity
Silver nitrate	7761-88-8	Did not show teratogenic effects in animal experiments. Animal testing did not show any effects on fertility. (similar substances)

Substances	CAS Number	STOT - single exposure
Silver nitrate	7761-88-8	No significant toxicity observed in animal studies at concentration requiring classification. (similar

		substances)
<b>Substances</b>	<b>CAS Number</b>	<b>STOT - repeated exposure</b>
Silver nitrate	7761-88-8	No significant toxicity observed in animal studies at concentration requiring classification. (similar substances)
<b>Substances</b>	<b>CAS Number</b>	<b>Aspiration hazard</b>
Silver nitrate	7761-88-8	Not applicable

**SECTION 12: Ecological Information**

**12.1. Toxicity  
Ecotoxicity Effects**

Substances	CAS Number	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Toxicity to Invertebrates
Silver nitrate	7761-88-8	EC10 (24h) 0.00041 mg/L (Pseudokirchnerella subcapitata) EC10 (7d) 0.0064 mg/L (Lemna paucicostata)	LC50: 0.00512-0.00787 mg/L (Poecilia reticulata) LC50: 0.009-0.02 mg/L (Lepomis macrochirus) LC50: 0.001339-0.001637 mg/L (Oncorhynchus mykiss) LC50: 0.0027 mg/L (Cyprinus carpio) LC50 (96h) 0.0012 mg/L (Pimephales promelas) NOEC (32d) 0.000351 mg/L (Pimephales promelas) LOEC (70d) 0.0012 mg/L (Oncorhynchus mykiss)	No information available	LC50 (48h) 0.00022 mg/L (Daphnia magna) EC10 (7d) 0.0064 mg/L (Daphnia magna)

**12.2. Persistence and degradability**

Substances	CAS Number	Persistence and Degradability
Silver nitrate	7761-88-8	The methods for determining biodegradability are not applicable to inorganic substances.

**12.3. Bioaccumulative potential**

Substances	CAS Number	Log Pow
Silver nitrate	7761-88-8	No information available

**12.4. Mobility in soil**

Substances	CAS Number	Mobility
Silver nitrate	7761-88-8	No information available

**12.5. Results of PBT and vPvB assessment**

No information available.

Substances	PBT and vPvB assessment
Silver nitrate	Not applicable

**12.6. Other adverse effects**

**Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

**SECTION 13: Disposal Considerations**

**13.1. Waste treatment methods**

**Disposal Method  
Contaminated Packaging**

Disposal should be made in accordance with federal, state, and local regulations.  
Follow all applicable national or local regulations.

## SECTION 14: Transport Information

### IMDG/IMO

**UN Number:** Not restricted  
**UN Proper Shipping Name:** Not restricted  
**Transport Hazard Class(es):** Not applicable  
**Packing Group:** Not applicable  
**Environmental Hazards:** Not applicable

### RID

**UN Number:** Not restricted  
**UN Proper Shipping Name:** Not restricted  
**Transport Hazard Class(es):** Not applicable  
**Packing Group:** Not applicable  
**Environmental Hazards:** Not applicable

### ADR

**UN Number:** Not restricted  
**UN Proper Shipping Name:** Not restricted  
**Transport Hazard Class(es):** Not applicable  
**Packing Group:** Not applicable  
**Environmental Hazards:** Not applicable

### IATA/ICAO

**UN Number:** Not restricted  
**UN Proper Shipping Name:** Not restricted  
**Transport Hazard Class(es):** Not applicable  
**Packing Group:** Not applicable  
**Environmental Hazards:** Not applicable

**14.1. UN Number:** Not restricted

**14.2. UN Proper Shipping Name:** Not restricted

**14.3. Transport Hazard Class(es):** Not applicable

**14.4. Packing Group:** Not applicable

**14.5. Environmental Hazards:** Not applicable

**14.6. Special Precautions for User:** None

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

## SECTION 15: Regulatory Information

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

#### International Inventories

**EINECS Inventory** This product, and all its components, complies with EINECS  
**US TSCA Inventory** All components listed on inventory or are exempt.  
**Canadian DSL Inventory** All components listed on inventory or are exempt.

#### Legend

**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory

**EINECS/ELINCS** - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List

**Germany, Water Endangering Classes (WGK)** WGK 3: Severe hazard to waters.

### 15.2. Chemical Safety Assessment

No information available

## SECTION 16: Other Information

### Full text of H-Statements referred to under sections 2 and 3

H271 - May cause fire or explosion; strong oxidizer  
H290 - May be corrosive to metals  
H314 - Causes severe skin burns and eye damage  
H315 - Causes skin irritation  
H318 - Causes serious eye damage  
H400 - Very toxic to aquatic life  
H410 - Very toxic to aquatic life with long lasting effects

### Key or legend to abbreviations and acronyms

bw – body weight  
CAS – Chemical Abstracts Service  
CLP – REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on Classification, Labelling and Packaging of substances and mixtures  
EC – European Commission  
EC10 – Effective Concentration 10%  
EC50 – Effective Concentration 50%  
EEC – European Economic Community  
ErC50 – Effective Concentration growth rate 50%  
IBC Code – International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk  
LC50 – Lethal Concentration 50%  
LD50 – Lethal Dose 50%  
LL0 – Lethal Loading 0%  
LL50 – Lethal Loading 50%  
MARPOL – International Convention for the Prevention of Pollution from Ships  
mg/kg – milligram/kilogram  
mg/L – milligram/liter  
NIOSH – National Institute for Occupational Safety and Health  
NOEC – No Observed Effect Concentration  
NTP – National Toxicology Program  
OEL – Occupational Exposure Limit  
PBT – Persistent Bioaccumulative and Toxic  
PC – Chemical Product category  
PEL – Permissible Exposure Limit  
ppm – parts per million  
PROC – Process category  
REACH – REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals  
STEL – Short Term Exposure Limit  
SU – Sector of Use category

### Key literature references and sources for data

[www.ChemADVISOR.com/](http://www.ChemADVISOR.com/)  
OSHA  
ECHA C&L

Revision Date: 09-Jun-2015

### Revision Note

SDS sections updated: 2

**This safety data sheet complies with the requirements of Regulation (EC) No. 453/2010**

### Disclaimer Statement

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**End of Safety Data Sheet**