# Safety Data Sheet
## acc. to OSHA HCS

Printing date 11/21/2017 Reviewed on 11/21/2017

## 1 Identification

· **Product identifier**

· **Trade name: Mixed Metals Low Level in 2% $HNO_3$ & 0.05% HCl**

· **Article number:** HOE045

· **Details of the supplier of the safety data sheet**
· **Manufacturer/Supplier:**
Aqua Solutions, Inc.
6913 Highway 225
DEER PARK, TX 77536
USA
800-256-2586

· **Information department:**
Technical Coordinator
Sherman Nelson sherman@aquasolutions.org
· **Emergency telephone number:**
Chemtrec: 800-424-9300
Canutec: 613-996-6666

## 2 Hazard(s) identification

· **Classification of the substance or mixture**

GHS05 Corrosion

Eye Dam. 1 H318 Causes serious eye damage.

GHS07

Skin Irrit. 2 H315 Causes skin irritation.

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

GHS05

· **Signal word** Danger

· **Hazard-determining components of labeling:**
Nitric Acid
· **Hazard statements**
Causes skin irritation.
Causes serious eye damage.
· **Precautionary statements**
Wash thoroughly after handling.
Wear protective gloves / eye protection / face protection.
If on skin: Wash with plenty of water.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

(Contd. on page 2)

# Safety Data Sheet
## acc. to OSHA HCS

Printing date 11/21/2017 Reviewed on 11/21/2017

**Trade name: Mixed Metals Low Level in 2% $HNO_3$ & 0.05% HCl**

(Contd. of page 1)

Immediately call a poison center/doctor.
Specific treatment (see on this label).
If skin irritation occurs: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.

· **Classification system:**
· **NFPA ratings (scale 0 - 4)**


Health = 3
Fire = 0
Reactivity = 0

· **HMIS-ratings (scale 0 - 4)**


Health = 2
Fire = 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:**

| | | |
|---|---|---|
| CAS: 7697-37-2 | Nitric Acid | 3.147% |

· **Table of Nonhazardous Ingredients**

| | | |
|---|---|---|
| CAS: 7647-01-0 | Hydrochloric Acid | 0.0569% |
| CAS: 7784-27-2 | Aluminum Nitrate | 0.0344% |
| CAS: 7782-61-8 | Ferric Nitrate | 0.0247% |
| CAS: 7789-02-8 | Chromium Nitrate Nonahydrate | 0.0008% |
| CAS: 10196-18-6 | Zinc Nitrate, Reagent Grade | 0.0005% |
| CAS: 19004-19-4 | Cupric Nitrate Hydrate | 0.0004% |
| CAS: 13478-00-7 | Nickel Nitrate, Reagent Grade, Crystal | 0.0001% |
| CAS: 7446-08-4 | selenium dioxide | 0.0001% |
| CAS: 7732-18-5 | Water | 96.735% |

## 4 First-aid measures

· **Description of first aid measures**
· **After inhalation:** 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:** If symptoms persist consult doctor.
· **Information for doctor:**
· **Most important symptoms and effects, both acute and delayed** No further relevant information available.

(Contd. on page 3)

# Safety Data Sheet
## acc. to OSHA HCS



**Trade name: Mixed Metals Low Level in 2% $HNO_3$ & 0.05% HCl**

(Contd. of page 2)

· **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

## 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** No further relevant information available.
· **Advice for firefighters**
· **Protective equipment:** No special measures required.

## 6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
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.
· **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:** | | |
|---|---|---|
| CAS: 7697-37-2 | Nitric Acid | 0.16 ppm |
| CAS: 7647-01-0 | Hydrochloric Acid | 1.8 ppm |
| CAS: 7784-27-2 | Aluminum Nitrate | 83 mg/m³ |
| CAS: 7782-61-8 | Ferric Nitrate | 22 mg/m³ |
| CAS: 10196-18-6 | Zinc Nitrate, Reagent Grade | 27 mg/m³ |
| CAS: 19004-19-4 | Cupric Nitrate Hydrate | 42 mg/m³ |
| CAS: 13478-00-7 | Nickel Nitrate, Reagent Grade, Crystal | 1.5 mg/m³ |
| CAS: 7446-08-4 | selenium dioxide | 0.84 mg/m³ |

| · **PAC-2:** | | |
|---|---|---|
| CAS: 7697-37-2 | Nitric Acid | 24 ppm |
| CAS: 7647-01-0 | Hydrochloric Acid | 22 ppm |
| CAS: 7784-27-2 | Aluminum Nitrate | 920 mg/m³ |
| CAS: 7782-61-8 | Ferric Nitrate | 110 mg/m³ |
| CAS: 10196-18-6 | Zinc Nitrate, Reagent Grade | 300 mg/m³ |
| CAS: 19004-19-4 | Cupric Nitrate Hydrate | 150 mg/m³ |
| CAS: 13478-00-7 | Nickel Nitrate, Reagent Grade, Crystal | 53 mg/m³ |
| CAS: 7446-08-4 | selenium dioxide | 1.6 mg/m³ |

(Contd. on page 4)

# Safety Data Sheet
## acc. to OSHA HCS



**Trade name: Mixed Metals Low Level in 2% $HNO_3$ & 0.05% HCl**

(Contd. of page 3)

| · **PAC-3:** | | |
|---|---|---|
| CAS: 7697-37-2 | Nitric Acid | 92 ppm |
| CAS: 7647-01-0 | Hydrochloric Acid | 100 ppm |
| CAS: 7784-27-2 | Aluminum Nitrate | 5,500 mg/m³ |
| CAS: 7782-61-8 | Ferric Nitrate | 640 mg/m³ |
| CAS: 10196-18-6 | Zinc Nitrate, Reagent Grade | 1,800 mg/m³ |
| CAS: 19004-19-4 | Cupric Nitrate Hydrate | 240 mg/m³ |
| CAS: 13478-00-7 | Nickel Nitrate, Reagent Grade, Crystal | 320 mg/m³ |
| CAS: 7446-08-4 | selenium dioxide | 9.5 mg/m³ |

## 7 Handling and storage

· **Handling:**
· **Precautions for safe handling** No special precautions are necessary if used correctly.
· **Information about protection against explosions and fires:** No special measures required.

· **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:** | |
|---|---|
| **CAS: 7697-37-2 Nitric Acid** | |
| PEL | Long-term value: 5 mg/m³, 2 ppm |
| REL | Short-term value: 10 mg/m³, 4 ppm<br>Long-term value: 5 mg/m³, 2 ppm |
| TLV | Short-term value: 10 mg/m³, 4 ppm<br>Long-term value: 5.2 mg/m³, 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.
Avoid contact with the skin.
Avoid contact with the eyes and skin.
· **Breathing equipment:** Not required.

(Contd. on page 5)

# Safety Data Sheet
acc. to OSHA HCS

Printing date 11/21/2017 Reviewed on 11/21/2017

**Trade name: Mixed Metals Low Level in 2% $HNO_3$ & 0.05% HCl**

(Contd. of page 4)

· **Protection of hands:**

Protective gloves

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

· **Body protection:** Protective work clothing

## 9 Physical and chemical properties

| | |
|---|---|
| · **Information on basic physical and chemical properties** | |
| · **General Information** | |
| · **Appearance:** | |
| **Form:** | Liquid |
| **Color:** | Clear |
| · **Odor:** | Odorless |
| · **Odor threshold:** | Not determined. |
| · **pH-value:** | Not determined. |
| · **Change in condition** | |
| **Melting point/Melting range:** | Undetermined. |
| **Boiling point/Boiling range:** | 100 °C (212 °F) |
| · **Flash point:** | Not applicable. |
| · **Flammability (solid, gaseous):** | Not applicable. |
| · **Ignition temperature:** | |
| **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. |

(Contd. on page 6)

# Safety Data Sheet
## acc. to OSHA HCS



**Trade name: Mixed Metals Low Level in 2% $HNO_3$ & 0.05% HCl**

(Contd. of page 5)

| | |
|---|---|
| · **Vapor pressure at 20 °C (68 °F):** | 23 hPa (17.3 mm Hg) |
| · **Density at 20 °C (68 °F):** | 1.0111 g/cm³ (8.43763 lbs/gal) |
| · **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:** | 96.7 % |
| **VOC content:** | 0.00 % |
| | 0.0 g/l / 0.00 lb/gl |
| **Solids content:** | 0.1 % |
| · **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:** Irritant to skin and mucous membranes.
· **on the eye:** 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:
Irritant

· **Carcinogenic categories**

| · **IARC (International Agency for Research on Cancer)** | | |
|---|---|---|
| CAS: 13478-00-7 | Nickel Nitrate, Reagent Grade, Crystal | 1 |
| CAS: 7446-08-4 | selenium dioxide | 3 |

| · **NTP (National Toxicology Program)** | | |
|---|---|---|
| CAS: 13478-00-7 | Nickel Nitrate, Reagent Grade, Crystal | K |

(Contd. on page 7)

# Safety Data Sheet
acc. to OSHA HCS

Printing date 11/21/2017 Reviewed on 11/21/2017

**Trade name: Mixed Metals Low Level in 2% $HNO_3$ & 0.05% HCl**

(Contd. of page 6)

· **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 1 (Self-assessment): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
Must not reach bodies of water or drainage ditch undiluted or unneutralized.
· **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.
· **Recommended cleansing agent:** Water, if necessary with cleansing agents.

## 14 Transport information

| | |
|---|---|
| · **UN-Number** | |
| · **DOT, IMDG, IATA** | UN3264 |
| · **UN proper shipping name** | |
| · **DOT** | Corrosive liquid, acidic, inorganic, n.o.s. (Nitric acid) |
| · **IMDG, IATA** | CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID) |
| · **Transport hazard class(es)** | |
| · **DOT** | |


| | |
|---|---|
| · **Class** | 8 Corrosive substances |

(Contd. on page 8)

# Safety Data Sheet
acc. to OSHA HCS

Printing date 11/21/2017 Reviewed on 11/21/2017

**Trade name: Mixed Metals Low Level in 2% $HNO_3$ & 0.05% HCl**

(Contd. of page 7)

| | |
|---|---|
| · **Label** | 8 |
| · **IMDG, IATA** | |
|  | |
| · **Class** | 8 Corrosive substances |
| · **Label** | 8 |
| · **Packing group** | |
| · **DOT, IMDG, IATA** | III |
| · **Environmental hazards:** | Not applicable. |
| · **Special precautions for user** | Warning: Corrosive substances |
| · **Danger code (Kemler):** | 80 |
| · **EMS Number:** | F-A,S-B |
| · **Segregation groups** | Acids |
| · **Stowage Category** | A |
| · **Stowage Code** | SW2 Clear of living quarters. |
| · **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** | Not applicable. |
| · **Transport/Additional information:** | |
| · **DOT** | |
| · **Quantity limitations** | On passenger aircraft/rail: 5 L<br>On cargo aircraft only: 60 L |
| · **IMDG** | |
| · **Limited quantities (LQ)** | 5L |
| · **Excepted quantities (EQ)** | Code: E1<br>Maximum net quantity per inner packaging: 30 ml<br>Maximum net quantity per outer packaging: 1000 ml |
| · **UN "Model Regulation":** | UN 3264 CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID), 8, III |

## 15 Regulatory information

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

| · **Section 355 (extremely hazardous substances):** | |
|---|---|
| CAS: 7697-37-2 | Nitric Acid |

| · **Section 313 (Specific toxic chemical listings):** | |
|---|---|
| CAS: 7697-37-2 | Nitric Acid |
| CAS: 7784-27-2 | Aluminum Nitrate |
| CAS: 7782-61-8 | Ferric Nitrate |
| CAS: 7789-02-8 | Chromium Nitrate Nonahydrate |
| CAS: 10196-18-6 | Zinc Nitrate, Reagent Grade |

(Contd. on page 9)

# Safety Data Sheet
## acc. to OSHA HCS

Printing date 11/21/2017 Reviewed on 11/21/2017

**Trade name: Mixed Metals Low Level in 2% $HNO_3$ & 0.05% HCl**

(Contd. of page 8)

| | |
|---|---|
| CAS: 13478-00-7 | Nickel Nitrate, Reagent Grade, Crystal |
| CAS: 7446-08-4 | selenium dioxide |

· **TSCA (Toxic Substances Control Act):**
Nitric Acid
Hydrochloric Acid
selenium dioxide
Water

· **TSCA new (21st Century Act) (Substances not listed)**
· **Proposition 65**

· **Chemicals known to cause cancer:**

| | |
|---|---|
| CAS: 13478-00-7 | Nickel Nitrate, Reagent Grade, Crystal |

· **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)**

| | | |
|---|---|---|
| CAS: 7446-08-4 | selenium dioxide | D |

· **TLV (Threshold Limit Value established by ACGIH)**
None of the ingredients is listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**
None of the ingredients is listed.

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

GHS05

· **Signal word** Danger

· **Hazard-determining components of labeling:**
Nitric Acid
· **Hazard statements**
Causes skin irritation.
Causes serious eye damage.
· **Precautionary statements**
Wash thoroughly after handling.
Wear protective gloves / eye protection / face protection.
If on skin: Wash with plenty of water.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a poison center/doctor.
Specific treatment (see on this label).

(Contd. on page 10)

# Safety Data Sheet
## acc. to OSHA HCS



**Trade name: Mixed Metals Low Level**
**in 2% $HNO_3$ & 0.05% HCl**

(Contd. of page 9)

*If skin irritation occurs: Get medical advice/attention.*
*Take off contaminated clothing and wash it before reuse.*
· **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:**
· **Date of preparation / last revision**
*11-21-2017: review SDS for accuracy. STN*
*Revision 0.0, 08-31-2016: Creation date for SDS. STN*
*11/21/2017 / -*
· **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*
*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*
*Skin Irrit. 2: Skin corrosion/irritation – Category 2*
*Eye Dam. 1: Serious eye damage/eye irritation – Category 1*