



**Be Right™**

# SAFETY DATA SHEET

Issue Date 10-Jan-2019

Revision Date 10-Feb-2025

Version 3.2

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## 1. IDENTIFICATION

### Product identifier

**Product Name** Molybdenum Standard Solution, 10.0 ± 0.1 mg/l as M<sup>+6</sup>

### Other means of identification

**Product Code(s)** 1418742

**Safety data sheet number** M00291

### Recommended use of the chemical and restrictions on use

**Recommended Use** Standard solution. Water Analysis.

**Uses advised against** Consumer use.

**Restrictions on use** For Laboratory Use Only.

### Details of the supplier of the safety data sheet

#### **Manufacturer Address**

Hach Company, P.O.Box 389, Loveland, CO 80539, USA, +1(970) 669-3050

#### **Emergency telephone number**

+1(303) 623-5716 - 24 Hour Service

## 2. HAZARDS IDENTIFICATION

### Classification

#### **Regulatory Status**

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

#### **Hazards not otherwise classified (HNOC)**

Not applicable

### Label elements

#### **Signal word**

None

#### **Hazard statements**

The product contains no substances which at their given concentration, are considered to be hazardous to health

### Other Hazards Known

None

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

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**Substance**

Not applicable

**Mixture**

**Chemical Family**

Mixture.

**Chemical nature**

aqueous solution.

Percent ranges are used where confidential product information is applicable.

| Chemical name                                                             | CAS No.    | Percent Range | HMRIC # |
|---------------------------------------------------------------------------|------------|---------------|---------|
| Borax (B <sub>4</sub> Na <sub>2</sub> O <sub>7</sub> ·10H <sub>2</sub> O) | 1303-96-4  | <0.1%         | -       |
| Ammonium hydroxide                                                        | 1336-21-6  | <0.1%         | -       |
| Ammonium chloride                                                         | 12125-02-9 | <0.1%         | -       |
| Nitric acid                                                               | 7697-37-2  | <0.01%        | -       |
| Molybdate (MoO <sub>4</sub> <sup>2-</sup> ), dihydrogen, (T-4)-           | 7782-91-4  | <0.01%        | -       |

#### 4. FIRST AID MEASURES

**Description of first aid measures**

**General advice**

No hazards which require special first aid measures. Use first aid treatment according to the nature of the injury.

**Inhalation**

Remove to fresh air.

**Eye contact**

Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.

**Skin contact**

Wash skin with soap and water.

**Ingestion**

Clean mouth with water and drink afterwards plenty of water.

**Most important symptoms and effects, both acute and delayed**

**Symptoms**

See Section 11 for additional Toxicological Information.

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

**Note to physicians**

Treat symptomatically.

#### 5. FIRE-FIGHTING MEASURES

**Suitable Extinguishing Media**

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Unsuitable Extinguishing Media**

Caution: Use of water spray when fighting fire may be inefficient.

**Specific hazards arising from the chemical**

No information available.

**Hazardous combustion products**

No information available.

**Special protective equipment for fire-fighters**

Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

## 6. ACCIDENTAL RELEASE MEASURES

### U.S. Notice

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance. Outside of the US, only persons properly qualified according to state or local regulations should respond to a spill involving chemicals.

### Personal precautions, protective equipment and emergency procedures

**Personal precautions** Ensure adequate ventilation.

### Environmental precautions

**Environmental precautions** See Section 12 for additional ecological information.

### Methods and material for containment and cleaning up

**Methods for containment** Prevent further leakage or spillage if safe to do so.

**Methods for cleaning up** Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Take up mechanically, placing in appropriate containers for disposal.

**Prevention of secondary hazards** Clean contaminated objects and areas thoroughly observing environmental regulations.

**Reference to other sections** See section 8 for more information. See section 13 for more information.

## 7. HANDLING AND STORAGE

### Precautions for safe handling

**Advice on safe handling** Handle in accordance with good industrial hygiene and safety practice.

### Conditions for safe storage, including any incompatibilities

**Storage Conditions** Keep containers tightly closed in a dry, cool and well-ventilated place.

**Flammability class** Not applicable

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Control parameters

### Exposure Guidelines

| Chemical name                                                                                | ACGIH TLV                                                                                                       | OSHA PEL                                                                    | NIOSH                                                             |
|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|-------------------------------------------------------------------|
| Borax (B <sub>4</sub> Na <sub>2</sub> O <sub>7</sub> ·10H <sub>2</sub> O)<br>CAS#: 1303-96-4 | TWA: 2 mg/m <sup>3</sup> inhalable particulate matter<br>STEL: 6 mg/m <sup>3</sup> inhalable particulate matter | (vacated) TWA: 10 mg/m <sup>3</sup>                                         | TWA: 5 mg/m <sup>3</sup>                                          |
| Ammonium chloride<br>CAS#: 12125-02-9                                                        | TWA: 10 mg/m <sup>3</sup> fume<br>STEL: 20 mg/m <sup>3</sup> fume                                               | (vacated) TWA: 10 mg/m <sup>3</sup><br>(vacated) STEL: 20 mg/m <sup>3</sup> | TWA: 10 mg/m <sup>3</sup> fume<br>STEL: 20 mg/m <sup>3</sup> fume |
| Nitric acid<br>CAS#: 7697-37-2                                                               | TWA: 2 ppm<br>STEL: 4 ppm                                                                                       | TWA: 2 ppm<br>TWA: 5 mg/m <sup>3</sup><br>(vacated) TWA: 2 ppm              | IDLH: 25 ppm<br>TWA: 2 ppm<br>TWA: 5 mg/m <sup>3</sup>            |

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|                                                                                    |                                                                |                                                                                                     |                                           |
|------------------------------------------------------------------------------------|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------|
|                                                                                    |                                                                | (vacated) TWA: 5 mg/m <sup>3</sup><br>(vacated) STEL: 4 ppm<br>(vacated) STEL: 10 mg/m <sup>3</sup> | STEL: 4 ppm<br>STEL: 10 mg/m <sup>3</sup> |
| Molybdate (MoO <sub>4</sub> <sup>2-</sup> ), dihydrogen, (T-4)-<br>CAS#: 7782-91-4 | TWA: 0.5 mg/m <sup>3</sup> Mo<br>respirable particulate matter | TWA: 5 mg/m <sup>3</sup><br>(vacated) TWA: 5 mg/m <sup>3</sup>                                      | IDLH: 1000 mg/m <sup>3</sup> Mo           |

**Appropriate engineering controls****Engineering Controls**

Showers

Eyewash stations

Ventilation systems. Technical measures and appropriate working operations should be given priority over the use of personal protective equipment. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Individual protection measures, such as personal protective equipment****Respiratory protection**

No protective equipment is needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation and evacuation may be required. Ensure adequate ventilation.

**Hand Protection**

Wear suitable gloves. Barrier creams may help to protect the exposed areas of skin. Gloves must be inspected prior to use. The selected protective gloves have to satisfy the specifications of EU Directive 2016/425 and the standard EN 374 derived from it. Chemical resistant gloves made of butyl rubber or nitrile rubber category III according to EN 374-1:2016.

**Eye/face protection**

Wear safety glasses with side shields (or goggles).

**Skin and body protection**

No special protective equipment required. Avoid contact with eyes, skin and clothing.

**General Hygiene Considerations**

Handle in accordance with good industrial hygiene and safety practice.

**Environmental exposure controls**

Local authorities should be advised if significant spillages cannot be contained. Do not allow into any sewer, on the ground or into any body of water.

**Thermal hazards**

None under normal processing.

**9. PHYSICAL AND CHEMICAL PROPERTIES****Information on basic physical and chemical properties****Physical state** Liquid**Appearance** aqueous solution**Odor** Odorless**Color** colorless**Odor threshold** No information available

| <b><u>Property</u></b>                         | <b><u>Values</u></b>                     | <b><u>Remarks • Method</u></b> |
|------------------------------------------------|------------------------------------------|--------------------------------|
| <b>Molecular weight</b>                        | No data available                        |                                |
| <b>pH</b>                                      | 9.0                                      | @ 20 °C                        |
| <b>Melting point / freezing point</b>          | ~ 0 °C / 32 °F                           |                                |
| <b>Initial boiling point and boiling range</b> | ~ 100 °C / 212 °F                        |                                |
| <b>Evaporation rate</b>                        | No data available                        |                                |
| <b>Vapor pressure</b>                          | 23.777 mm Hg / 3.17 kPa at 25 °C / 77 °F |                                |
| <b>Relative vapor density</b>                  | 0.62                                     |                                |

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**Specific gravity - VALUE 1** 1

**Partition coefficient** Not applicable

**Soil Organic Carbon-Water Partition Coefficient** Not applicable

**Autoignition temperature** No data available

**Decomposition temperature** No information available

**Dynamic viscosity** No data available

**Kinematic viscosity** No information available

**Solubility(ies)**

**Water solubility**

| Water solubility classification | Water solubility | Water Solubility Temperature |
|---------------------------------|------------------|------------------------------|
| Soluble                         | > 1000 mg/L      | 25 °C / 77 °F                |

**Solubility in other solvents**

| Chemical Name | Solubility classification | Solubility  | Solubility Temperature |
|---------------|---------------------------|-------------|------------------------|
| Acid          | Soluble                   | > 1000 mg/L | 25 °C / 77 °F          |

**Other information**

**Corrosive to metals**

**Steel Corrosion Rate**

No data available

**Aluminum Corrosion Rate**

No data available

**Volatile Organic Compounds (VOC) Content**

See ingredients information below

| Chemical name                                                             | CAS No.    | Volatile organic compounds (VOC) content | CAA (Clean Air Act) |
|---------------------------------------------------------------------------|------------|------------------------------------------|---------------------|
| Borax (B <sub>4</sub> Na <sub>2</sub> O <sub>7</sub> ·10H <sub>2</sub> O) | 1303-96-4  | No data available                        | -                   |
| Ammonium hydroxide                                                        | 1336-21-6  | No data available                        | -                   |
| Ammonium chloride                                                         | 12125-02-9 | No data available                        | -                   |
| Nitric acid                                                               | 7697-37-2  | Not applicable                           | -                   |
| Molybdate (MoO <sub>4</sub> <sup>2-</sup> ), dihydrogen, (T-4)-           | 7782-91-4  | Not applicable                           | -                   |

**Explosive properties**

**Upper explosion limit**

No information available

**Lower explosion limit**

No information available

**Flammable properties**

**Flash point**

No data available

**Flammability Limit in Air**

**Upper flammability limit:**

No data available

**Lower flammability limit:**

No data available

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**Oxidizing properties**

No data available.

**Bulk density**

Not applicable

## 10. STABILITY AND REACTIVITY

### Reactivity

Not applicable.

### Chemical stability

Stable under normal conditions.

### Explosion data

**Sensitivity to Mechanical Impact** None.

**Sensitivity to Static Discharge** None.

### Possibility of hazardous reactions

None under normal processing.

### Hazardous polymerization

None under normal processing.

### Conditions to avoid

None known based on information supplied.

### Incompatible materials

Strong oxidizing agents, strong acids, and strong bases.

### Hazardous decomposition products

None known based on information supplied.

## 11. TOXICOLOGICAL INFORMATION

### Information on likely routes of exposure

#### Product Information

**Inhalation** No known effect based on information supplied.

**Eye contact** No known effect based on information supplied.

**Skin contact** No known effect based on information supplied.

**Ingestion** No known effect based on information supplied.

**Symptoms** No information available.

### Acute toxicity

Based on available data, the classification criteria are not met

### Mixture

No data available.

### Ingredient Acute Toxicity Data

Test data reported below.

### Oral Exposure Route

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| Chemical name                                                                                        | Endpoint type        | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|------------------------------------------------------------------------------------------------------|----------------------|---------------|---------------|-----------------------|------------------------------------------------|
| Borax (B <sub>4</sub> Na <sub>2</sub> O <sub>7</sub> ·10H <sub>2</sub> O) (<0.1%)<br>CAS#: 1303-96-4 | Rat LD <sub>50</sub> | 2660 mg/kg    | None reported | None reported         | GESTIS                                         |
| Ammonium hydroxide (<0.1%)<br>CAS#: 1336-21-6                                                        | Rat LD <sub>50</sub> | 350 mg/kg     | None reported | None reported         | Vendor SDS                                     |
| Ammonium chloride (<0.1%)<br>CAS#: 12125-02-9                                                        | Rat LD <sub>50</sub> | 1650 mg/kg    | None reported | None reported         | IUCLID                                         |
| Molybdate (MoO <sub>4</sub> <sup>2-</sup> ), dihydrogen, (T-4)- (<0.01%)<br>CAS#: 7782-91-4          | Rat LD <sub>50</sub> | 2689 mg/kg    | None reported | None reported         | Vendor SDS                                     |

#### Dermal Exposure Route

| Chemical name                                                                                        | Endpoint type           | Reported dose | Exposure time | Toxicological effects | Key literature references and sources for data |
|------------------------------------------------------------------------------------------------------|-------------------------|---------------|---------------|-----------------------|------------------------------------------------|
| Borax (B <sub>4</sub> Na <sub>2</sub> O <sub>7</sub> ·10H <sub>2</sub> O) (<0.1%)<br>CAS#: 1303-96-4 | Rabbit LD <sub>50</sub> | 10000 mg/kg   | None reported | None reported         | HSDB                                           |

#### Unknown Acute Toxicity

0% of the mixture consists of ingredient(s) of unknown toxicity.

#### Acute Toxicity Estimations (ATE)

|                                      |                          |
|--------------------------------------|--------------------------|
| <b>ATEmix (oral)</b>                 | No information available |
| <b>ATEmix (dermal)</b>               | No information available |
| <b>ATEmix (inhalation-dust/mist)</b> | No information available |
| <b>ATEmix (inhalation-vapor)</b>     | No information available |
| <b>ATEmix (inhalation-gas)</b>       | No information available |

#### Skin corrosion/irritation

Based on available data, the classification criteria are not met.

#### Mixture

No data available.

#### Ingredient Skin Corrosion/Irritation Data

Test data reported below.

| Chemical name                                 | Test method               | Species | Reported dose | Exposure time | Results            | Key literature references and sources for data |
|-----------------------------------------------|---------------------------|---------|---------------|---------------|--------------------|------------------------------------------------|
| Ammonium hydroxide (<0.1%)<br>CAS#: 1336-21-6 | Existing human experience | Human   | None reported | None reported | Corrosive to skin  | HSDB                                           |
| Ammonium chloride (<0.1%)<br>CAS#: 12125-02-9 | Existing human experience | Human   | None reported | None reported | Mild skin irritant | RTECS                                          |
| Nitric acid (<0.01%)                          | Existing human experience | Human   | None reported | None reported | Corrosive to skin  | ERMA                                           |

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|                 |  |  |  |  |  |  |
|-----------------|--|--|--|--|--|--|
| CAS#: 7697-37-2 |  |  |  |  |  |  |
|-----------------|--|--|--|--|--|--|

**Serious eye damage/irritation**

Based on available data, the classification criteria are not met.

**Mixture**

No data available.

**Ingredient Eye Damage/Eye Irritation Data**

Test data reported below.

| Chemical name                                 | Test method               | Species | Reported dose | Exposure time | Results           | Key literature references and sources for data |
|-----------------------------------------------|---------------------------|---------|---------------|---------------|-------------------|------------------------------------------------|
| Ammonium hydroxide (<0.1%)<br>CAS#: 1336-21-6 | Standard Draize Test      | Rabbit  | 0.044 mg      | None reported | Corrosive to eyes | RTECS                                          |
| Nitric acid (<0.01%)<br>CAS#: 7697-37-2       | Existing human experience | Human   | None reported | None reported | Corrosive to eyes | ERMA                                           |

**Respiratory or skin sensitization**

Based on available data, the classification criteria are not met.

**Mixture**

No data available.

**Ingredient Sensitization Data**

Test data reported below.

**Skin Sensitization Exposure Route**

| Chemical name                                 | Test method                           | Species    | Results                               | Key literature references and sources for data       |
|-----------------------------------------------|---------------------------------------|------------|---------------------------------------|------------------------------------------------------|
| Ammonium chloride (<0.1%)<br>CAS#: 12125-02-9 | OECD Test No. 406: Skin Sensitization | Guinea pig | Not confirmed to be a skin sensitizer | OECD 429: Skin Sensitization: Local Lymph Node Assay |

**STOT - single exposure**

Based on available data, the classification criteria are not met.

**Mixture**

No data available.

**Ingredient Specific Target Organ Toxicity Single Exposure Data**

Test data reported below.

**Oral Exposure Route**

| Chemical name                                                                                        | Endpoint type             | Reported dose | Exposure time | Toxicological effects                                                                                                                            | Key literature references and sources for data |
|------------------------------------------------------------------------------------------------------|---------------------------|---------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Borax (B <sub>4</sub> Na <sub>2</sub> O <sub>7</sub> ·10H <sub>2</sub> O) (<0.1%)<br>CAS#: 1303-96-4 | Man<br>LD <sub>Lo</sub>   | 709 mg/kg     | None reported | <b>Behavioral</b><br>Convulsions or effect on seizure threshold<br><b>Cardiac</b><br>Pulse rate<br><b>Gastrointestinal</b><br>Nausea or vomiting | RTECS                                          |
| Ammonium hydroxide (<0.1%)                                                                           | Human<br>LD <sub>Lo</sub> | 43 mg/kg      | None reported | None reported                                                                                                                                    | RTECS                                          |

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|                                                  |                                                           |            |               |               |       |
|--------------------------------------------------|-----------------------------------------------------------|------------|---------------|---------------|-------|
| CAS#: 1336-21-6                                  |                                                           |            |               |               |       |
| Ammonium chloride<br>(<0.1%)<br>CAS#: 12125-02-9 | Domestic<br>mammal - Not<br>specified<br>LD <sub>Lo</sub> | 1500 mg/kg | None reported | None reported | RTECS |

#### Dermal Exposure Route

| Chemical name                              | Endpoint type           | Reported dose | Exposure time | Toxicological effects                                   | Key literature references and sources for data |
|--------------------------------------------|-------------------------|---------------|---------------|---------------------------------------------------------|------------------------------------------------|
| Nitric acid<br>(<0.01%)<br>CAS#: 7697-37-2 | Rat<br>TD <sub>Lo</sub> | 226500 mg/kg  | None reported | <b>Blood</b><br>Methemoglobinemia-Carboxyhe<br>moglobin | RTECS                                          |

#### Inhalation (Vapor) Exposure Route

| Chemical name                                    | Endpoint type             | Reported dose | Exposure time | Toxicological effects                                                                                 | Key literature references and sources for data |
|--------------------------------------------------|---------------------------|---------------|---------------|-------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Ammonium hydroxide<br>(<0.1%)<br>CAS#: 1336-21-6 | Human<br>TC <sub>Lo</sub> | 408 mg/L      | None reported | <b>Lungs, Thorax, or<br/>Respiration</b><br>Fibrosis, focal (pneumoconiosis)<br>Acute pulmonary edema | RTECS                                          |
| Nitric acid<br>(<0.01%)<br>CAS#: 7697-37-2       | Rat<br>TC <sub>Lo</sub>   | 460 mg/L      | 1 hours       | <b>Nutritional and Gross<br/>Metabolic</b><br>Weight loss or decreased weight<br>gain                 | RTECS                                          |

#### STOT - repeated exposure

Based on available data, the classification criteria are not met.

#### Mixture

No data available.

#### Ingredient Specific Target Organ Toxicity Repeat Exposure Data

Test data reported below.

#### Oral Exposure Route

| Chemical name                                                                                              | Endpoint type           | Reported dose | Exposure time | Toxicological effects                                                                                                                                                                | Key literature references and sources for data |
|------------------------------------------------------------------------------------------------------------|-------------------------|---------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Borax<br>(B <sub>4</sub> Na <sub>2</sub> O <sub>7</sub> ·10H <sub>2</sub> O)<br>(<0.1%)<br>CAS#: 1303-96-4 | Rat<br>TD <sub>Lo</sub> | 70000 mg/kg   | 90 days       | <b>Brain and Coverings</b><br>Weight loss<br><b>Chronic</b><br>Changes in testicular weight<br><b>Nutritional and Gross<br/>Metabolic</b><br>Weight loss or decreased weight<br>gain | RTECS                                          |
| Ammonium chloride<br>(<0.1%)<br>CAS#: 12125-02-9                                                           | Rat<br>TD <sub>Lo</sub> | 3500 mg/kg    | 7 days        | No toxicological effects<br>observed                                                                                                                                                 | RTECS                                          |

#### Inhalation (Vapor) Exposure Route

| Chemical name                              | Endpoint type           | Reported dose    | Exposure time | Toxicological effects                                                                                           | Key literature references and sources for data |
|--------------------------------------------|-------------------------|------------------|---------------|-----------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Nitric acid<br>(<0.01%)<br>CAS#: 7697-37-2 | Rat<br>TC <sub>Lo</sub> | 0.001071<br>mg/L | 84 days       | <b>Behavioral</b><br>Muscle contraction or spasticity<br><b>Biochemical</b><br>Enzyme inhibition, induction, or | RTECS                                          |

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|--|--|--|--|-----------------------------------------------------------------------------------------------------------------------------------------|--|
|  |  |  |  | change in blood or tissue levels<br>(true cholinesterase)<br><b>Kidney, Ureter, or Bladder</b><br>Other changes in urine<br>composition |  |
|--|--|--|--|-----------------------------------------------------------------------------------------------------------------------------------------|--|

**Carcinogenicity**

Based on available data, the classification criteria are not met.

**Mixture**

No data available.

**Ingredient Carcinogenicity Data**

No data available.

| Chemical name                                                             | CAS No.    | ACGIH | IARC                | NTP | OSHA |
|---------------------------------------------------------------------------|------------|-------|---------------------|-----|------|
| Borax (B <sub>4</sub> Na <sub>2</sub> O <sub>7</sub> ·10H <sub>2</sub> O) | 1303-96-4  | -     | Group 2A            | -   | X    |
| Ammonium hydroxide                                                        | 1336-21-6  | -     | -                   | -   | -    |
| Ammonium chloride                                                         | 12125-02-9 | -     | -                   | -   | -    |
| Nitric acid                                                               | 7697-37-2  | -     | Group 1<br>Group 2A | -   | X    |
| Molybdate (MoO <sub>4</sub> <sup>2-</sup> ),<br>dihydrogen, (T-4)-        | 7782-91-4  | A3    | -                   | -   | -    |

**Legend**

|                                                                          |                |
|--------------------------------------------------------------------------|----------------|
| <b>ACGIH (American Conference of Governmental Industrial Hygienists)</b> | Does not apply |
| <b>NTP (National Toxicology Program)</b>                                 | Does not apply |
| <b>OSHA</b>                                                              | Does not apply |

**Germ cell mutagenicity**

Based on available data, the classification criteria are not met.

**Mixture *invitro* Data**

No data available.

**Substance *invitro* Data**

Test data reported below.

| Chemical name                                    | Test                       | Cell Strain                   | Reported dose | Exposure time | Results                               | Key literature references and sources for data |
|--------------------------------------------------|----------------------------|-------------------------------|---------------|---------------|---------------------------------------|------------------------------------------------|
| Ammonium hydroxide<br>(<0.1%)<br>CAS#: 1336-21-6 | Mutation in microorganisms | <i>Salmonella typhimurium</i> | 10 mg/disc    | None reported | Positive test result for mutagenicity | RTECS                                          |
| Ammonium chloride<br>(<0.1%)<br>CAS#: 12125-02-9 | OECD 471                   | <i>Salmonella typhimurium</i> | 5 mg/plate    | 72 hours      | Negative                              | RTECS                                          |

**Mixture *in vivo* Data**

No data available.

**Substance *in vivo* Data**

Test data reported below.

**Oral Exposure Route**

| Chemical name | Test | Species | Reported dose | Exposure time | Results | Key literature references and sources for data |
|---------------|------|---------|---------------|---------------|---------|------------------------------------------------|
|---------------|------|---------|---------------|---------------|---------|------------------------------------------------|

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| Borax<br>(B <sub>4</sub> Na <sub>2</sub> O <sub>7</sub> ·10H <sub>2</sub> O)<br>(<0.1%)<br>CAS#: 1303-96-4 | Specific locus test | Drosophila<br>melanogaster | 795 mg/L | None reported | Positive test result for<br>mutagenicity | RTECS |
|------------------------------------------------------------------------------------------------------------|---------------------|----------------------------|----------|---------------|------------------------------------------|-------|

#### **Reproductive toxicity**

Based on available data, the classification criteria are not met.

#### **Mixture**

No data available.

#### **Ingredient Reproductive Toxicity Data**

Test data reported below.

#### **Oral Exposure Route**

| Chemical name                                                                                              | Endpoint type           | Reported dose | Exposure time | Toxicological effects                                                                                                  | Key literature references and sources for data |
|------------------------------------------------------------------------------------------------------------|-------------------------|---------------|---------------|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| Borax<br>(B <sub>4</sub> Na <sub>2</sub> O <sub>7</sub> ·10H <sub>2</sub> O)<br>(<0.1%)<br>CAS#: 1303-96-4 | Rat<br>TD <sub>Lo</sub> | 70000 mg/kg   | 90 days       | <b>Paternal Effects</b><br>Epididymis<br>Fallopian tubes<br>Ovaries<br>Sperm duct<br>testes<br><b>Maternal Effects</b> | RTECS                                          |
| Ammonium chloride<br>(<0.1%)<br>CAS#: 12125-02-9                                                           | Rat<br>NOAEL            | 1500 mg/kg    | 16 days       | None reported                                                                                                          | ECHA                                           |
| Nitric acid<br>(<0.01%)<br>CAS#: 7697-37-2                                                                 | Rat<br>TD <sub>Lo</sub> | 21150 mg/kg   | 21 days       | <b>Effects on Embryo or Fetus</b><br>Fetotoxicity (except death e.g.<br>stunted fetus)                                 | RTECS                                          |

#### **Aspiration hazard**

Based on available data, the classification criteria are not met.

## **12. ECOLOGICAL INFORMATION**

#### **Ecotoxicity**

Based on available data, the classification criteria are not met.

#### **Unknown aquatic toxicity**

0.0017% of the mixture consists of components(s) of unknown hazards to the aquatic environment.

#### **Mixture**

#### **Aquatic Acute Toxicity**

No data available.

#### **Aquatic Chronic Toxicity**

No data available.

#### **Substance**

#### **Aquatic Acute Toxicity**

Test data reported below.

#### **Fish**

| Chemical name      | Exposure time | Species                     | Endpoint type    | Reported dose | Key literature references and sources for data |
|--------------------|---------------|-----------------------------|------------------|---------------|------------------------------------------------|
| Ammonium hydroxide | 96 hours      | <i>Oncorhynchus kisutch</i> | LC <sub>50</sub> | 0.45 mg/L     | PEEN                                           |

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|                                                  |          |                            |                  |            |      |
|--------------------------------------------------|----------|----------------------------|------------------|------------|------|
| (<0.1%)<br>CAS#: 1336-21-6                       |          |                            |                  |            |      |
| Ammonium chloride<br>(<0.1%)<br>CAS#: 12125-02-9 | 96 hours | <i>Oncorhynchus mykiss</i> | LC <sub>50</sub> | 42.91 mg/L | ECHA |

#### Crustacea

| Chemical name                                                                                              | Exposure time | Species              | Endpoint type                     | Reported dose        | Key literature references and sources for data |
|------------------------------------------------------------------------------------------------------------|---------------|----------------------|-----------------------------------|----------------------|------------------------------------------------|
| Borax<br>(B <sub>4</sub> Na <sub>2</sub> O <sub>7</sub> ·10H <sub>2</sub> O)<br>(<0.1%)<br>CAS#: 1303-96-4 | 48 Hours      | <i>Daphnia magna</i> | EC <sub>50</sub> LC <sub>50</sub> | 141 mg/L >= 141 mg/L | PEEN                                           |
| Ammonium hydroxide<br>(<0.1%)<br>CAS#: 1336-21-6                                                           | 48 Hours      | <i>Daphnia magna</i> | LC <sub>50</sub>                  | 0.66 mg/L            | PEEN                                           |
| Ammonium chloride<br>(<0.1%)<br>CAS#: 12125-02-9                                                           | 48 Hours      | <i>Daphnia magna</i> | LC <sub>50</sub>                  | 161 mg/L             | IUCLID                                         |

#### Aquatic Chronic Toxicity

No data available.

#### Persistence and degradability

##### Mixture

No data available.

##### Mixture

No data available.

##### Partition coefficient

Not applicable

##### Mobility

##### Soil Organic Carbon-Water Partition Coefficient

Not applicable

##### Other adverse effects

No information available

### 13. DISPOSAL CONSIDERATIONS

#### Waste treatment methods

##### Waste from residues/unused products

Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

##### Contaminated packaging

Do not reuse empty containers.

##### US EPA Waste Number

No information available

##### Special instructions for disposal

If permitted by regulation. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Open cold water tap completely, slowly pour the reacted material to the drain. Allow cold water to run for 5 minutes to completely flush the system. Check with local municipal and state authorities and waste contractors for pertinent local information regarding the proper disposal of chemicals.

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#### 14. TRANSPORT INFORMATION

**DOT** Not regulated

**TDG** Not regulated

**IATA** Not regulated

**IMDG** Not regulated

**Note:** No special precautions necessary.

##### **Additional information**

There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods.

If the item is not in a reagent set or kit, the classification given above applies.

If the item is part of a reagent set or kit the classification would change to the following:

UN3316 Chemical Kit, Hazard Class 9, Packing Group II or III.

If the item is not regulated, the Chemical Kit classification does not apply.

#### 15. REGULATORY INFORMATION

##### **National Inventories**

*For Inventory status, "complies" means, listed on the inventory, exempted or otherwise complies.*

**TSCA** Complies

**DSL/NDSL** Complies

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

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

##### **International Inventories**

**EINECS/ELINCS** Complies

**ENCS** Complies

**IECSC** Complies

**KECI** Complies

**PICCS** Complies

**TCSI** Complies

**AICS** Complies

**NZIoC** Complies

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

**ENCS** - Japan Existing and New Chemical Substances

**IECSC** - China Inventory of Existing Chemical Substances

**KECL** - Korean Existing and Evaluated Chemical Substances

**PICCS** - Philippines Inventory of Chemicals and Chemical Substances

**TCSI** - Taiwan Chemical Substances Inventory

**AICS** - Australian Inventory of Chemical Substances

**NZIoC** - New Zealand Inventory of Chemicals

##### **US Federal Regulations**

##### **SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

| Chemical name                         | SARA 313 - Threshold Values % |
|---------------------------------------|-------------------------------|
| Ammonium hydroxide (CAS #: 1336-21-6) | 1.0                           |
| Ammonium chloride (CAS #: 12125-02-9) | 1.0                           |

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|                                |     |
|--------------------------------|-----|
| Nitric acid (CAS #: 7697-37-2) | 1.0 |
|--------------------------------|-----|

**SARA 311/312 Hazard Categories**

|                                   |    |
|-----------------------------------|----|
| Acute health hazard               | No |
| Chronic Health Hazard             | No |
| Fire hazard                       | No |
| Sudden release of pressure hazard | No |
| Reactive Hazard                   | No |

**CWA (Clean Water Act)**

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

| Chemical name                   | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|---------------------------------|-----------------------------|------------------------|---------------------------|----------------------------|
| Ammonium hydroxide<br>1336-21-6 | 1000 lb                     | -                      | -                         | X                          |
| Ammonium chloride<br>12125-02-9 | 5000 lb                     | -                      | -                         | X                          |
| Nitric acid<br>7697-37-2        | 1000 lb                     | -                      | -                         | X                          |

**CERCLA**

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material

| Chemical name                   | Hazardous Substances RQs | CERCLA/SARA RQ | Reportable Quantity (RQ)                   |
|---------------------------------|--------------------------|----------------|--------------------------------------------|
| Ammonium hydroxide<br>1336-21-6 | 1000 lb                  | -              | RQ 1000 lb final RQ<br>RQ 454 kg final RQ  |
| Ammonium chloride<br>12125-02-9 | 5000 lb                  | -              | RQ 5000 lb final RQ<br>RQ 2270 kg final RQ |
| Nitric acid<br>7697-37-2        | 1000 lb                  | 1000 lb        | RQ 1000 lb final RQ<br>RQ 454 kg final RQ  |

**U.S. - Department of Homeland Security - Chemical Facility Anti-Terrorism Standards (CFATS) - Security Issues**

| Chemical name                              | U.S. - Department of Homeland Security - Chemical Facility Anti-Terrorism Standards (CFATS) - Security Issues |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Nitric acid<br>(<0.01%)<br>CAS#: 7697-37-2 | Release - Toxic; Theft - Explosives/Improvised Explosive Device Precursors                                    |

**US State Regulations**

**California Proposition 65**

This product does not contain any Proposition 65 chemicals

**IMERC:** Not applicable

**U.S. State Right-to-Know Regulations**

This product may contain substances regulated by state right-to-know regulations.

| Chemical name                      | New Jersey | Massachusetts | Pennsylvania |
|------------------------------------|------------|---------------|--------------|
| Borax (B4Na2O7.10H2O)<br>1303-96-4 | X          | X             | X            |
| Ammonium hydroxide<br>1336-21-6    | X          | X             | X            |
| Ammonium chloride                  | X          | X             | X            |

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|--------------------------|---|---|---|
| 12125-02-9               |   |   |   |
| Nitric acid<br>7697-37-2 | X | X | X |

**U.S. EPA Label Information**

| Chemical name                                                             | FIFRA    | FDA             |
|---------------------------------------------------------------------------|----------|-----------------|
| Borax (B <sub>4</sub> Na <sub>2</sub> O <sub>7</sub> ·10H <sub>2</sub> O) | 180.1121 | -               |
| Ammonium hydroxide                                                        | 180.0910 | 21 CFR 184.1139 |
| Ammonium chloride                                                         | 180.0920 | 21 CFR 184.1138 |

**16. OTHER INFORMATION, INCLUDING DATE OF PREPARATION OF THE LAST REVISION**

**Special Comments**

None

**Additional information**

**Global Automotive Declarable Substance List (GADSL)**

| Chemical name                                                                          | Global Automotive Declarable Substance List Classifications | Global Automotive Declarable Substance List Thresholds |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------|--------------------------------------------------------|
| Borax (B <sub>4</sub> Na <sub>2</sub> O <sub>7</sub> ·10H <sub>2</sub> O)<br>1303-96-4 | Declarable Substance (LR)<br>Prohibited Substance (LR)      | 0.1 %                                                  |

**NFPA and HMIS Classifications**

| NFPA | Health hazards - 0 | Flammability - 0 | Instability - 0      | Physical and chemical properties - |
|------|--------------------|------------------|----------------------|------------------------------------|
| HMIS | Health hazards - 0 | Flammability - 0 | Physical hazards - 0 | Personal protection -<br>X<br>- I  |

**Key or legend to abbreviations and acronyms used in the safety data sheet**

|             |                                                                                             |
|-------------|---------------------------------------------------------------------------------------------|
| ACGIH       | ACGIH (American Conference of Governmental Industrial Hygienists)                           |
| ATSDR       | ATSDR (Agency for Toxic Substances and Disease Registry)                                    |
| CCRIS       | CCRIS (Chemical Carcinogenesis Research Information System)                                 |
| CDC         | CDC (Center for Disease Control)                                                            |
| CEPA        | CEPA (Canadian Environmental Protection Agency)                                             |
| CICAD       | CICAD (Concise International Chemical Assessment Documents)                                 |
| ECHA        | ECHA (The European Chemicals Agency)                                                        |
| EEA         | EEA (European Environment Agency)                                                           |
| EPA         | Environmental Protection Agency                                                             |
| ERMA        | ERMA (New Zealand Environmental Risk Management Authority)                                  |
| ECOSARS     | Estimation through ECOSARS v1.11 part of the Estimation Programs Interface (EPI) Suite™     |
| FDA         | FDA (Food & Drug Administration)                                                            |
| GESTIS      | GESTIS (Information System on Hazardous Substances of the German Social Accident Insurance) |
| HSDB        | HSDB (Hazardous Substances Data Bank)                                                       |
| INERIS      | INERIS (The National Industrial Environment and Risks Institute)                            |
| IPCS INCHEM | IPCS INCHEM (International Programme on Chemical Safety)                                    |
| IUCLID      | IUCLID (The International Uniform Chemical Information Database)                            |
| NITE        | Japan National Institute of Technology and Evaluation (NITE)                                |
| NIH         | NIH (National Institutes of Health)                                                         |
| NIOSH       | NIOSH (National Institute for Occupational Safety and Health)                               |

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|            |                                                                                     |
|------------|-------------------------------------------------------------------------------------|
| LOLI       | LOLI (List of Lists - An International Chemical Regulatory Database)                |
| NDF        | no data                                                                             |
| NICNAS     | Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS) |
| NIOSH IDLH | Immediately Dangerous to Life or Health                                             |
| OSHA       | Occupational Safety and Health Administration of the US Department of Labor         |
| PEEN       | PEEN (Pan European Ecological Network)                                              |
| RTECS      | RTECS (Registry of Toxic Effects of Chemical Substances)                            |
| SIDS       | SIDS (Screening Information Dataset) for High Volume Chemicals                      |
| SYKE       | The Finnish Environment Institute (SYKE)                                            |
| USDA       | USDA (United States Department of Agriculture)                                      |
| USDC       | USDC (United States Department of Commerce)                                         |
| WHO        | WHO (World Health Organization)                                                     |

**Legend - Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

|      |                                 |         |                                                                                                                                                                                                                                                                                       |
|------|---------------------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TWA  | TWA (time-weighted average)     | STEL    | STEL (Short Term Exposure Limit)                                                                                                                                                                                                                                                      |
| MAC  | Maximum Allowable Concentration | Ceiling | Ceiling Limit Value                                                                                                                                                                                                                                                                   |
| X    | Listed                          | Vacated | These values have no official status. The only binding levels of contaminants are those listed in the final OSHA PEL. These lists are for reference purposes only. Please note that some reference state regulations of these "liberated" exposure limits in their state regulations. |
| SKN* | Skin designation                | SKN+    | Skin sensitization                                                                                                                                                                                                                                                                    |
| RSP+ | Respiratory sensitization       | **      | Hazard Designation                                                                                                                                                                                                                                                                    |
| C    | Carcinogen                      | R       | Reproductive toxicant                                                                                                                                                                                                                                                                 |
| M    | mutagen                         |         |                                                                                                                                                                                                                                                                                       |

**Prepared By** Hach Product Compliance Department

**Issue Date** 10-Jan-2019

**Revision Date** 10-Feb-2025

**Revision Note** None

**Disclaimer**

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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**End of Safety Data Sheet**