

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

1.1. Product identifier

Product form : Mixture
Product name : ORP Standard, 400mV
Product code : LC18015

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

Use of the substance/mixture : For laboratory and manufacturing use only.

1.3. Details of the supplier of the safety data sheet

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

1.4. Emergency telephone number

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

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

GHS-US classification

Skin Corr. 1B H314
Eye Dam. 1 H318

2.2. Label elements

GHS-US labelling

Hazard pictograms (GHS-US) :



GHS05

Signal word (GHS-US) : Danger
Hazard statements (GHS-US) : H314 - Causes severe skin burns and eye damage
Precautionary statements (GHS-US) : P260 - Do not breathe mist, vapours, spray
P264 - Wash exposed skin thoroughly after handling
P280 - Wear protective gloves, protective clothing, eye protection, face protection
P301+P330+P331 - IF SWALLOWED: rinse mouth. Do NOT induce vomiting
P303+P361+P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340 - IF INHALED: remove victim to fresh air and keep at rest in a position comfortable for breathing
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER or doctor/physician
P363 - Wash contaminated clothing before reuse
P405 - Store locked up
P501 - Dispose of contents/container to comply with local, state and federal regulations

2.3. Other hazards

Other hazards not contributing to the classification : None.

2.4. Unknown acute toxicity (GHS-US)

No data available

SECTION 3: Composition/information on ingredients

3.1. Substance

Not applicable

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Full text of H-phrases: see section 16

3.2. Mixture

| Name | Product identifier | % | GHS-US classification |
|--|--------------------|------|---|
| Water | (CAS No) 7732-18-5 | 88.1 | Not classified |
| Ferrous Ammonium Sulfate Hexahydrate | (CAS No) 7783-85-9 | 9.1 | Skin Irrit. 2, H315 Eye Irrit. 2A, H319 STOT SE 3, H335 |
| Sulfuric Acid, 96% w/w | (CAS No) 7664-93-9 | 1.8 | Skin Corr. 1A, H314 Eye Dam. 1, H318 |
| Ferric Ammonium Sulfate, Dodecahydrate | (CAS No) 7783-83-7 | 1 | Skin Irrit. 2, H315 Eye Irrit. 2A, H319 |

SECTION 4: First aid measures

4.1. Description of first aid measures

- First-aid measures general : Never give anything by mouth to an unconscious person. If you feel unwell, seek medical advice (show the label where possible).
- First-aid measures after inhalation : Remove to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician.
- First-aid measures after skin contact : Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Immediately call a POISON CENTER or doctor/physician.
- First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.
- First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor/physician.

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

- Symptoms/injuries : Causes severe skin burns and eye damage.
- Symptoms/injuries after eye contact : Causes serious eye damage.

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

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Foam. Dry powder. Carbon dioxide. Water spray. Sand.
- Unsuitable extinguishing media : Do not use a heavy water stream.

5.2. Special hazards arising from the substance or mixture

- Reactivity : Thermal decomposition generates : Corrosive vapours.

5.3. Advice for firefighters

- Firefighting instructions : Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire. Avoid (reject) fire-fighting water to enter environment.
- Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Protective equipment : Safety glasses. Gloves. Protective clothing. Head/neck protection.
- Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

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

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

- Methods for cleaning up : Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Collect spillage. Store away from other materials.

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6.4. Reference to other sections

See Heading 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Provide good ventilation in process area to prevent formation of vapour. Do not breathe mist, vapours, spray. Avoid contact during pregnancy/while nursing.
- Hygiene measures : Wash exposed skin thoroughly after handling.

7.2. Conditions for safe storage, including any incompatibilities

- Technical measures : Comply with applicable regulations.
- Storage conditions : Keep only in the original container in a cool, well ventilated place away from : incompatible materials. Keep container closed when not in use.
- Incompatible products : Strong bases. metals. cyanides.
- Incompatible products : Heat sources.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

| Sulfuric Acid, 96% w/w (7664-93-9) | | |
|------------------------------------|------------------------|-----------|
| USA ACGIH | ACGIH TWA (mg/m³) | 0.2 mg/m³ |
| USA OSHA | OSHA PEL (TWA) (mg/m³) | 1 mg/m³ |

| Ferric Ammonium Sulfate, Dodecahydrate (7783-83-7) | | |
|--|-------------------|---------|
| USA ACGIH | ACGIH TWA (mg/m³) | 1 mg/m³ |

| Ferrous Ammonium Sulfate Hexahydrate (7783-85-9) | | |
|--|-------------------|------------------------------------|
| USA ACGIH | ACGIH TWA (mg/m³) | 1 mg/m³ Iron salts, soluble, as Fe |

8.2. Exposure controls

- Appropriate engineering controls : Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Provide adequate general and local exhaust ventilation.
- Personal protective equipment : Avoid all unnecessary exposure.
- Hand protection : Wear protective gloves.
- Eye protection : Chemical goggles or face shield.
- Skin and body protection : Wear suitable protective clothing.
- Respiratory protection : Wear appropriate mask.
- Other information : Do not eat, drink or smoke during use.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

- Physical state : Liquid
- Appearance : Clear, colorless liquid.
- Colour : Yellow.
- Odour : None.
- Odour threshold : No data available
- pH : No data available
- Relative evaporation rate (butylacetate=1) : No data available
- Melting point : No data available
- Freezing point : No data available
- Boiling point : No data available
- Flash point : No data available
- Self ignition temperature : No data available
- Decomposition temperature : No data available

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| | |
|----------------------------------|---------------------|
| Flammability (solid, gas) | : No data available |
| Vapour pressure | : No data available |
| Relative vapour density at 20 °C | : No data available |
| Relative density | : No data available |
| Density | : 1.06 g/ml |
| Solubility | : Soluble in water. |
| Log Pow | : No data available |
| Log Kow | : No data available |
| Viscosity, kinematic | : No data available |
| Viscosity, dynamic | : No data available |
| Explosive properties | : Not applicable. |
| Oxidising properties | : None. |
| Explosive limits | : No data available |

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Thermal decomposition generates : Corrosive vapours.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

Reacts violently with (some) bases: release of heat.

10.4. Conditions to avoid

Direct sunlight. Extremely high or low temperatures.

10.5. Incompatible materials

metals. Strong bases. cyanides.

10.6. Hazardous decomposition products

Sulfur compounds. Thermal decomposition generates : Corrosive vapours.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

Sulfuric Acid, 96% w/w (7664-93-9)

| | |
|---------------|---|
| LD50 oral rat | 2140 mg/kg bodyweight (Rat; Experimental value,Rat; Experimental value) |
|---------------|---|

Water (7732-18-5)

| | |
|---------------|---------------|
| LD50 oral rat | ≥ 90000 mg/kg |
|---------------|---------------|

Ferrous Ammonium Sulfate Hexahydrate (7783-85-9)

| | |
|---------------|------------|
| LD50 oral rat | 3250 mg/kg |
|---------------|------------|

| | |
|-----------------------------------|--|
| Skin corrosion/irritation | : Causes severe skin burns and eye damage. |
| Serious eye damage/irritation | : Causes serious eye damage. |
| Respiratory or skin sensitisation | : Not classified |
| Germ cell mutagenicity | : Not classified |
| Carcinogenicity | : Not classified |

Sulfuric Acid, 96% w/w (7664-93-9)

| | |
|------------|----------------------------|
| IARC group | 1 - Carcinogenic to humans |
|------------|----------------------------|

| | |
|--|------------------|
| Reproductive toxicity | : Not classified |
| Specific target organ toxicity (single exposure) | : Not classified |

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| | |
|---|---|
| Specific target organ toxicity (repeated exposure) | : Not classified |
| Aspiration hazard | : Not classified |
| Potential Adverse human health effects and symptoms | : Based on available data, the classification criteria are not met. |
| Symptoms/injuries after eye contact | : Causes serious eye damage. |

SECTION 12: Ecological information

12.1. Toxicity

| Sulfuric Acid, 96% w/w (7664-93-9) | |
|---|---|
| LC50 fishes 1 | 42 mg/l (96 h; Gambusia affinis) |
| EC50 Daphnia 1 | 29 mg/l (24 h; Daphnia magna) |
| LC50 fish 2 | 49 mg/l (48 h; Lepomis macrochirus) |
| TLM fish 1 | 42 mg/l (96 h; Gambusia affinis) |
| Threshold limit other aquatic organisms 1 | 6900 mg/l (24 h; Pseudomonas fluorescens) |

12.2. Persistence and degradability

| ORP Standard, 400mV | |
|--|---|
| Persistence and degradability | Not established. |
| Sulfuric Acid, 96% w/w (7664-93-9) | |
| Persistence and degradability | Biodegradability: not applicable. |
| Biochemical oxygen demand (BOD) | Not applicable |
| Chemical oxygen demand (COD) | Not applicable |
| ThOD | Not applicable |
| BOD (% of ThOD) | Not applicable |
| Water (7732-18-5) | |
| Persistence and degradability | Not established. |
| Ferric Ammonium Sulfate, Dodecahydrate (7783-83-7) | |
| Persistence and degradability | Biodegradability in water: no data available. |
| Biochemical oxygen demand (BOD) | Not applicable |
| Chemical oxygen demand (COD) | Not applicable |
| ThOD | Not applicable |
| BOD (% of ThOD) | Not applicable |
| Ferrous Ammonium Sulfate Hexahydrate (7783-85-9) | |
| Persistence and degradability | Not established. |

12.3. Bioaccumulative potential

| ORP Standard, 400mV | |
|--|------------------------------------|
| Bioaccumulative potential | Not established. |
| Sulfuric Acid, 96% w/w (7664-93-9) | |
| Log Pow | -2.20 (Estimated value) |
| Bioaccumulative potential | Bioaccumulation: not applicable. |
| Water (7732-18-5) | |
| Bioaccumulative potential | Not established. |
| Ferric Ammonium Sulfate, Dodecahydrate (7783-83-7) | |
| Bioaccumulative potential | No bioaccumulation data available. |
| Ferrous Ammonium Sulfate Hexahydrate (7783-85-9) | |
| Bioaccumulative potential | Not established. |

12.4. Mobility in soil

No additional information available

12.5. Other adverse effects

| | |
|-------------------|-------------------------------------|
| Other information | : Avoid release to the environment. |
|-------------------|-------------------------------------|

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SECTION 13: Disposal considerations

13.1. Waste treatment methods

- Waste disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to comply with local, state and federal regulations.
- Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

- In accordance with DOT
- Transport document description : UN2796 Sulfuric acid (with not more than 51% acid), 8, II
- UN-No.(DOT) : 2796
- DOT NA no. : UN2796
- DOT Proper Shipping Name : Sulfuric acid
with not more than 51% acid
- Department of Transportation (DOT) Hazard Classes : 8 - Class 8 - Corrosive material 49 CFR 173.136
- Hazard labels (DOT) : 8 - Corrosive substances



- Packing group (DOT) : II - Medium Danger
- DOT Special Provisions (49 CFR 172.102) : A3 - For combination packagings, if glass inner packagings (including ampoules) are used, they must be packed with absorbent material in tightly closed metal receptacles before packing in outer packagings.
A7 - Steel packagings must be corrosion-resistant or have protection against corrosion.
B2 - MC 300, MC 301, MC 302, MC 303, MC 305, and MC 306 and DOT 406 cargo tanks are not authorized.
B15 - Packagings must be protected with non-metallic linings impervious to the lading or have a suitable corrosion allowance.
IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31H21). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized.
N6 - Battery fluid packaged with electric storage batteries, wet or dry, must conform to the packaging provisions of 173.159 (g) or (h) of this subchapter.
N34 - Aluminum construction materials are not authorized for any part of a packaging which is normally in contact with the hazardous material.
T8 - 4 178.274(d)(2) Normal..... Prohibited
TP2 - a. The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = $95 / (1 + a (tr - tf))$ Where: tr is the maximum mean bulk temperature during transport, tf is the temperature in degrees celsius of the liquid during filling, and is the mean coefficient of cubical expansion of the liquid between the mean temperature of the liquid during filling (tf) and the maximum mean bulk temperature during transportation (tr) both in degrees celsius. b. For liquids transported under ambient conditions may be calculated using the formula: $a = (d_{15} - d_{50}) / 35 \cdot d_{50}$ Where: d15 and d50 are the densities (in units of mass per unit volume) of the liquid at 15 C (59 F) and 50 C (122 F), respectively.
TP12 - This material is considered highly corrosive to steel.
- DOT Packaging Exceptions (49 CFR 173.xxx) : 154
- DOT Packaging Non Bulk (49 CFR 173.xxx) : 202
- DOT Packaging Bulk (49 CFR 173.xxx) : 242
- DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 1 L
- DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 30 L
- DOT Vessel Stowage Location : B - (i) The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers, or one passenger per each 3 m of overall vessel length; and (ii) "On deck only" on passenger vessels in which the number of passengers specified in paragraph (k)(2)(i) of this section is exceeded.

Additional information

- Other information : No supplementary information available.

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ADR

Transport document description :

Transport by sea

No additional information available

Air transport

No additional information available

SECTION 15: Regulatory information

15.1. US Federal regulations

| | |
|---|---------------------------------|
| ORP Standard, 400mV | |
| SARA Section 311/312 Hazard Classes | Immediate (acute) health hazard |
| Sulfuric Acid, 96% w/w (7664-93-9) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory | |
| RQ (Reportable quantity, section 304 of EPA's List of Lists) : | 1000 lb |
| SARA Section 311/312 Hazard Classes | Immediate (acute) health hazard |
| Water (7732-18-5) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory | |
| Ferric Ammonium Sulfate, Dodecahydrate (7783-83-7) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory | |
| Ferrous Ammonium Sulfate Hexahydrate (7783-85-9) | |
| Listed on the United States TSCA (Toxic Substances Control Act) inventory | |
| RQ (Reportable quantity, section 304 of EPA's List of Lists) : | 1000 lb |
| SARA Section 311/312 Hazard Classes | Immediate (acute) health hazard |

15.2. International regulations

CANADA

| | |
|--|---|
| ORP Standard, 400mV | |
| WHMIS Classification | Class E - Corrosive Material |
| Sulfuric Acid, 96% w/w (7664-93-9) | |
| Listed on the Canadian DSL (Domestic Substances List) inventory. | |
| WHMIS Classification | Class E - Corrosive Material |
| Water (7732-18-5) | |
| WHMIS Classification | Uncontrolled product according to WHMIS classification criteria |
| Ferric Ammonium Sulfate, Dodecahydrate (7783-83-7) | |
| Not listed on the Canadian DSL (Domestic Substances List) inventory. | |
| WHMIS Classification | Class D Division 2 Subdivision B - Toxic material causing other toxic effects |
| Ferrous Ammonium Sulfate Hexahydrate (7783-85-9) | |
| Not listed on the Canadian DSL (Domestic Substances List) inventory. | |
| WHMIS Classification | Class D Division 2 Subdivision B - Toxic material causing other toxic effects |

EU-Regulations

No additional information available

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

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

Not classified

15.2.2. National regulations

Sulfuric Acid, 96% w/w (7664-93-9)

Listed on the Canadian Ingredient Disclosure List

Ferrous Ammonium Sulfate Hexahydrate (7783-85-9)

Not listed on the Canadian Ingredient Disclosure List

15.3. US State regulations

No additional information available

SECTION 16: Other information

Other information : None.

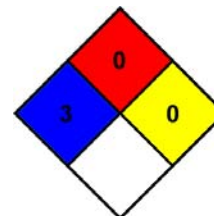
Full text of H-phrases: see section 16:

| | |
|---------------|--|
| Eye Dam. 1 | Serious eye damage/eye irritation, Category 1 |
| Eye Irrit. 2A | Serious eye damage/eye irritation, Category 2A |
| Skin Corr. 1A | Skin corrosion/irritation, Category 1A |
| Skin Corr. 1B | Skin corrosion/irritation, Category 1B |
| Skin Irrit. 2 | Skin corrosion/irritation, Category 2 |
| STOT SE 3 | Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation |
| H314 | Causes severe skin burns and eye damage |
| H315 | Causes skin irritation |
| H318 | Causes serious eye damage |
| H319 | Causes serious eye irritation |
| H335 | May cause respiratory irritation |

NFPA health hazard : 3 - Short exposure could cause serious temporary or residual injury even though prompt medical attention was given.

NFPA fire hazard : 0 - Materials that will not burn.

NFPA reactivity : 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



HMIS III Rating

Health : 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given

Flammability : 0 Minimal Hazard

Physical : 0 Minimal Hazard

Personal Protection : H

SDS US (GHS HazCom 2012)

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