

SAFETY DATA SHEET

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SECTION 1. IDENTIFICATION

Product Name: Rhodium Sulfate Solution

CAS #: 10489-46-0

Relevant identified uses of the substance: Scientific research and development

Supplier details:

Stanford Advanced Materials

E-mail: sales@samaterials.com

Tel: (949) 407-8904

Address: 23661 Birtcher Dr., Lake Forest, CA 92630 U.S.A.

SECTION 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)

GHS05 Corrosion

Skin Corr. 1A H314 Causes severe skin burns and eye damage.

Hazards not otherwise classified No data available.

GHS label elements The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

Hazard pictograms

GHS05

Signal word Danger

Hazard-determining components of labeling:

Sulfuric acid

Rhodium(III) sulfate

Hazard statements

H314 Causes severe skin burns and eye damage.

Precautionary statements

P260 Do not breathe dust/fume/gas/mist/vapors/spray.P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

WHMIS classification

D2B - Toxic material causing other toxic effects

E - Corrosive material

Classification system

HMIS ratings (scale 0-4)

(Hazardous Materials Identification System)

HEALTH

FIRE

REACTIVITY

3

0

1

Health (acute effects) = 3

Flammability = 0

Physical Hazard = 1

Other hazards

Results of PBT and vPvB assessment:

PBT: N/A.

vPvB: N/A.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical characterization: Mixtures

Dangerous components:

7664-93-9 Sulfuric acid Skin Corr. 1A, H314 25.0%

10489-46-0 Rhodium(III) sulfate Met. Corr.1, H290; Skin Corr. 1B, H314; Eye Dam. 1, H318 12.0%

Additional information None known.

Non-Hazardous Ingredients

7732-18-5 Water

SECTION 4. FIRST AID MEASURES

Description of first aid measures

General information Immediately remove any clothing soiled by the product.

If inhaled:

Supply fresh air. If not breathing, provide artificial respiration. Keep patient warm.

Seek immediate medical advice.

In case of skin contact:

Immediately wash with soap and water; rinse thoroughly.

Seek immediate medical advice.

In case of eye contact: Rinse opened eye for several minutes under running water. Consult a physician. If swallowed: Seek medical treatment.

Information for doctor

Most important symptoms and effects, both acute and delayed

Causes severe skin burns.

Causes serious eye damage.

Indication of any immediate medical attention and special treatment needed No information available.

SECTION 5. FIREFIGHTING MEASURES

Extinguishing media

Suitable extinguishing media Product is not flammable. Use fire-fighting measures that suit the surrounding fire.

Special hazards arising from the substance or mixture

If this product is involved in a fire, the following can be released:

Sulfur oxides (SO_x)

Rhodium oxide

Advice for firefighters

Protective equipment:

Wear self-contained respirator.

Wear fully protective impervious suit.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Environmental precautions: Do not allow material to be released to the environment without official permits.

Methods and material for containment and cleanup:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Use neutralizing agent.

Dispose of contaminated material as waste according to section 13.

Ensure adequate ventilation.

Prevention of secondary hazards: No special measures required.

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.

SECTION 7. HANDLING AND STORAGE

Handling

Precautions for safe handling

Keep container tightly sealed.

Store in cool, dry place in tightly closed containers.

Ensure adequate ventilation.

Information about protection against explosions and fires: The product is not flammable

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:

Store away from strong bases.

Store away from oxidizing agents.

Store away from reducing agents.

Store away from metal powders.

Water reacts with many metals to give hydrogen, often violently. Water is also incompatible with many

reactive organic

and inorganic chemicals.

Further information about storage conditions:

Keep container tightly sealed.

Store in cool, dry conditions in well-sealed containers.

Specific end use(s) No information available.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Additional information about design of technical systems:

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least

100 feet per minute.

Control parameters

Components with limit values that require monitoring at the workplace:

7664-93-9 Sulfuric acid (25.0%)

PEL (USA) Long-term value: 1 mg/m³

REL (USA) Long-term value: 1 mg/m³

TLV (USA) Long-term value: 0.2* mg/m³

*as thoracic fraction

EL (Canada) Long-term value: 0.2 mg/m³

ACGIH A2; IARC 1

EV (Canada) Long-term value: 0.2 mg/m³

10489-46-0 Rhodium(III) sulfate (12.0%)

TLV (USA) Long-term value: 0.01 mg/m³

as Rh

Additional information: No data

Exposure controls

Personal protective equipment

Follow typical general protective and industrial hygiene measures for handling chemicals.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Do not inhale dust / smoke / mist.

Avoid contact with the eyes and skin.

Breathing equipment: Use suitable respirator when high concentrations are present.

Protection of hands:

Impervious gloves

Inspect gloves prior to use.

The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary

from

manufacturer to manufacturer.

Penetration time of glove material (in minutes) No data available.

Eye protection:

Tightly sealed goggles Full face protection

Body protection: Protective work clothing.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Appearance:

Form: Liquid

Color: Red-orange

Odor: Acidic

Odor threshold: No data available.

pH: No data available.

Melting point/range: No data available.

Boiling point/range: No data available.

Sublimation temperature / start: No data available.

Flammability (solid, gas): No data available.

Ignition temperature: No data available.

Decomposition temperature: No data available.

Auto igniting: Product is not selfigniting.

Danger of explosion: No data available.

Explosion limits:

Lower: No data available.

Upper: No data available.

Vapor pressure at 20 °C (68 °F): 23 hPa (17 mm Hg)

Density at 20 °C (68 °F): 1.4 g/cm³ (11.683 lbs/gal)

Relative density No data available.

Vapor density No data available.

Evaporation rate No data available.

Solubility in / Miscibility with

Water: Fully miscible

Partition coefficient (n-octanol/water): No data available.

Viscosity:

Dynamic: No data available.

Kinematic: No data available.

Solvent content:

Organic solvents: 0.0 %

Solids content: 12.0 %

Other information No information available.

SECTION 10. STABILITY AND REACTIVITY

Reactivity No data available.

Chemical stability Stable under recommended storage conditions.

Thermal decomposition / conditions to be avoided: Decomposition will not occur if used and stored according to specifications.

Possibility of hazardous reactions

Water reacts violently with alkali metals.

Reacts with strong oxidizing agents

Water reacts with many metals to give hydrogen, often violently. Water is also incompatible with many

reactive organic and inorganic chemicals.

Conditions to avoid No information available.

Incompatible materials:

Bases

Oxidizing agents

Reducing agents

Metal powders

Hazardous decomposition products:

Sulfur oxides (SO_x)

Rhodium oxide

SECTION 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects

Acute toxicity:

Swallowing will lead to a strong corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach.

The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for components in this product.

LD/LC50 values that are relevant for classification: No data

Skin irritation or corrosion: Causes severe skin burns.

Eye irritation or corrosion: Causes serious eye damage.

Sensitization: No sensitizing effects known.

Germ cell mutagenicity: The Registry of Toxic Effects of Chemical Substances (RTECS) contains mutation data for components in this product.

Carcinogenicity:

ACGIH A4: Not classifiable as a human carcinogen: Inadequate data on which to classify the agent

in
terms of its
carcinogenicity in humans and/or animals.

Reproductive toxicity: The Registry of Toxic Effects of Chemical Substances (RTECS) contains
reproductive data for
components in this product.

Specific target organ system toxicity - repeated exposure: N/A

Specific target organ system toxicity - single exposure: N/A

Aspiration hazard: N/A

Subacute to chronic toxicity: The Registry of Toxic Effects of Chemical Substances (RTECS)
contains
multiple dose
toxicity data for this substance.

Additional toxicological information:

To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.

The product shows the following dangers according to internally approved calculation methods for
preparations:

Corrosive

SECTION 12. ECOLOGICAL INFORMATION

Toxicity

Aquatic toxicity: No information available.

Persistence and degradability: No information available.

Bioaccumulative potential: No information available.

Mobility in soil: No information available.

Additional ecological information:

General notes:

Do not allow product to reach ground water, water course or sewage system.

Do not allow material to be released to the environment without official permits.

Danger to drinking water if even small quantities leak into the ground.

Avoid transfer into the environment.

Results of PBT and vPvB assessment:

PBT: N/A.

vPvB: N/A.

Other adverse effects No information available.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Recommendation: Consult state, local or national regulations to ensure proper disposal.

Uncleaned packagings:

Recommendation: Disposal must be made according to official regulations.

Recommended cleansing agent: Water, if necessary with cleansing agents.

SECTION 14. TRANSPORT INFORMATION

UN-Number

DOT, IMDG, IATA UN3264

UN proper shipping name

DOT Corrosive liquid, acidic, inorganic, n.o.s. (Rhodium(III) sulfate, Sulfuric acid)

IMDG, IATA CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (Rhodium(III) sulfate,
SULPHURIC ACID)

Transport hazard class(es)

DOT

Class 8 Corrosive substances.

Label 8

Class 8 (C1) Corrosive substances

Label 8

IMDG, IATA

Class 8 Corrosive substances.

Label 8

Packing group

DOT, IMDG, IATA III

Environmental hazards:

Marine pollutant (IMDG): No

Special precautions for user Warning: Corrosive substances

EMS Number: F-A,S-B

Segregation groups AcidsTransport in bulk according to Annex II of MARPOL73/78 and the IBC Code N/A.

Transport/Additional information:

DOT

Marine Pollutant (DOT): No

UN "Model Regulation": UN3264, Corrosive liquid, acidic, inorganic, n.o.s. (Rhodium(III) sulfate, Sulfuric acid), 8, III

SECTION 15. REGULATORY INFORMATION

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

GHS label elements The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

Hazard pictograms

GHS05

Signal word Danger

Hazard-determining components of labeling:

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Hazard statements

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P405 Store locked up.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

National regulations

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act

Chemical substance Inventory.

All components of this product are listed on the Canadian Domestic Substances List (DSL).

SARA Section 313 (specific toxic chemical listings)

7664-93-9 Sulfuric acid 25.0%

California Proposition 65

Prop 65 - Chemicals known to cause cancer

None of the ingredients are listed.

Prop 65 - Developmental toxicity

None of the ingredients are listed.

Prop 65 - Developmental toxicity, female

None of the ingredients are listed.

Prop 65 - Developmental toxicity, male

None of the ingredients are listed.

Information about limitation of use: For use only by technically qualified individuals.

Other regulations, limitations and prohibitive regulations

Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No.

1907/2006. None of the ingredients are listed.

The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for

the manufacturing, placing on the market and use must be observed.

None of the ingredients is listed.

Annex XIV of the REACH Regulations (requiring Authorisation for use)

None of the ingredients is listed.

Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

SECTION 16. OTHER INFORMATION

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH). The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product.