



INSTRUMENTS

Safety Data Sheet Sulfuric acid, 10 - 51%

SECTION 1: Identification

Product identifier

Product name Sulfuric acid, 10 - 51%

Recommended use of the chemical and restrictions on use

Electrochemical toxic gas sensor.

Supplier's details

Name RKI Instruments, Inc.
Address 33248 Central Ave.
Union City, CA 94587
USA

Telephone (510) 441-5656

Fax (510) 441-5650

Emergency phone number(s)

(800) 424-9300 Chemtrec

SECTION 2: Hazard identification

Classification of the substance or mixture

GHS classification in accordance with: (US) OSHA (29 CFR 1910.1200)

- Eye damage/irritation (chapter 3.3), Cat. 1
- Skin corrosion/irritation (chapter 3.2), Cat. 1A
- Corrosive to metals (chapter 2.16), Cat. 1

GHS label elements, including precautionary statements

Pictogram



Signal word

Danger

Safety Data Sheet

Sulfuric acid, 10 - 51%

Hazard statement(s)

H290	May be corrosive to metals
H314	Causes severe skin burns and eye damage
H318	Causes serious eye damage

Precautionary statement(s)

P234	Keep only in original container.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P264	Wash 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): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340	IF INHALED: Remove person to fresh air and keep 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/doctor.
P363	Wash contaminated clothing before reuse.
P390	Absorb spillage to prevent material damage.
P405	Store locked up.
P406	Store in a corrosive resistant container with a resistant inner liner.
P501	Dispose of contents/container in accordance with applicable regional, national and local laws and regulations

SECTION 3: Composition/information on ingredients

Mixtures

Components

1. Water

Concentration	49 - 90 % (Weight)
EC no.	231-791-2
CAS no.	7732-18-5

2. Sulfuric acid

Concentration	10 - 51 % (Weight)
EC no.	231-639-5
CAS no.	7664-93-9
Index no.	016-020-00-8

SECTION 4: First-aid measures

Description of necessary first-aid measures

General advice	Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.
If inhaled	Remove person to fresh air and keep comfortable for breathing. Call a poison center or doctor if you feel unwell.

Safety Data Sheet

Sulfuric acid, 10 - 51%

Acute and delayed symptoms and effects: May cause respiratory irritation. Signs/symptoms may include burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary edema.

In case of skin contact

Wash with plenty of soap and water for at least 15 minutes. Call a poison center or doctor if you feel unwell.

Acute and delayed symptoms and effects: Causes severe skin burns. Signs/symptoms may include localized redness, swelling, itching, intense pain, blistering, ulceration, and tissue destruction.

In case of eye contact

Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor.

Acute and delayed symptoms and effects: Causes serious eye damage. Signs/symptoms may include cloudy appearance of the cornea, chemical burns, severe pain, tearing, ulcerations, significantly impaired vision or complete loss of vision.

If swallowed

Rinse mouth. Do NOT induce vomiting. Immediately call a poison center or doctor. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration. Never give anything by mouth to an unconscious person.

Acute and delayed symptoms and effects: Harmful if swallowed. Causes burns to nose, mouth, throat, and digestive tract. Signs/symptoms may include severe mouth, throat and abdominal pain, nausea, vomiting, and diarrhea, blood in the feces and/or vomitus may also be seen.

Most important symptoms/effects, acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2) and/or in section 11

SECTION 5: Fire-fighting measures

Suitable extinguishing media

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Specific hazards arising from the chemical

No data available.

Special protective actions for fire-fighters

Avoid any skin contact. Effects of contact or inhalation may be delayed. Fire may produce irritating, corrosive and/or toxic gases. Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution. Wear positive pressure self-contained breathing apparatus (SCBA). Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection. Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

Further information

Use water spray to cool unopened containers.

SECTION 6: Accidental release measures

Safety Data Sheet

Sulfuric acid, 10 - 51%

Personal precautions, protective equipment and emergency procedures

Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Use personal protection recommended in Section 8.

As an immediate precautionary measure, isolate spill or leak area in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate enclosed areas.

Environmental precautions

Do not let product enter drains.

Methods and materials for containment and cleaning up

Stop leak if you can do it without risk. Sweep up and shovel into suitable containers for disposal.

Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

Precautions for safe handling

Do not swallow. Do not breathe mist, vapors, or spray. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. See Section 8 for information on Personal Protective Equipment.

Conditions for safe storage, including any incompatibilities

Store locked up. Store away from incompatible materials. See Section 10 for information on Incompatible Materials. Keep out of the reach of children.

Specific end use(s)

Apart from the uses mentioned in section 1 no other specific uses are stipulated.

SECTION 8: Exposure controls/personal protection

Control parameters

CAS: 7664-93-9 (EC: 231-639-5)

Sulfuric acid

ACGIH (USA): 0.2 mg/m³, (Thor.) TLV® inhalation; 0.2 mg/m³ TWA inhalation; Cal/OSHA: 0.1 mg/m³, (ST) 3 mg/m³ PEL inhalation; NIOSH (USA): 1 mg/m³ REL inhalation; OSHA: 1 mg/m³ PEL inhalation; 1 mg/m³ TWA inhalation

Appropriate engineering controls

Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, gas, etc.) below recommended exposure limits.

Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Tightly fitting safety goggles. If splash hazard, wear faceshield (8-inch minimum). Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Safety Data Sheet

Sulfuric acid, 10 - 51%

Wear protective gloves. Consult manufacturer specifications for further information.

Body protection

Wear protective clothing. Clothing with full length sleeves and pants should be worn. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multipurpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Thermal hazards

No data available.

Environmental exposure controls

Do not let product enter drains.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance/form (physical state, color, etc.)	Clear oily liquid.
Odor	Odorless.
Odor threshold	No data available.
pH	1.2 at 5 g/l
Melting point/freezing point	3C (100%), -32C (93%), -38C (78%), -64C (65%).
Initial boiling point and boiling range	ca. 290C (ca. 554F) (decomposes at 340C)
Flash point	No data available.
Evaporation rate	No data available.
Flammability (solid, gas)	No data available.
Upper/lower flammability limits	No data available.
Upper/lower explosive limits	No data available.
Vapor pressure	No data available.
Vapor density	3.4
Relative density	1.40 (50%), 1.07 (10%)
Solubility(ies)	Miscible with water, liberates much heat.
Partition coefficient: n-octanol/water	No data available.
Auto-ignition temperature	No data available.
Decomposition temperature	No data available.
Viscosity	No data available.
Explosive properties	No data available.
Oxidizing properties	No data available.

SECTION 10: Stability and reactivity

Reactivity

Contact with incompatible materials. Sources of ignition. Exposure to heat.

Chemical stability

Stable under normal storage conditions.

Safety Data Sheet

Sulfuric acid, 10 - 51%

Possibility of hazardous reactions

No data available.

Conditions to avoid

Heat, flames and sparks. Incompatible products. Keep away from open flames, hot surfaces and sources of ignition.

Incompatible materials

Bases, Halides, Organic materials, Carbides, fulminates, Nitrates, picrates, Cyanides, Chlorates, alkali halides, Zinc salts, permanganates, e.g. potassium permanganate, Hydrogen peroxide, Azides, Perchlorates., Nitromethane, phosphorous, Reacts violently with:, cyclopentadiene, cyclopentanone oxime, nitroaryl amines, hexalithium disilicide, phosphorous(III) oxide, Powdered metals

Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Sulphur oxides
In the event of fire: see section 5

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity

Likely Routes of Exposure: Eye contact. Skin contact. Inhalation. Ingestion.

Symptoms (including delayed and immediate effects):

Inhalation: May cause respiratory irritation. Signs/symptoms may include burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary edema.

Ingestion: Causes burns to nose, mouth, throat, and digestive tract. Signs/symptoms may include severe mouth, throat and abdominal pain, nausea, vomiting, and diarrhea, blood in the feces and/or vomitus may also be seen.

Components:

Sulfuric acid

LD50 Oral - Rat - 2,140 mg/kg

LC50 Inhalation - Rat - 510 mg/m³ - 2 h

Skin corrosion/irritation

Acute and delayed symptoms and effects: Causes severe skin burns. Signs/symptoms may include localized redness, swelling, itching, intense pain, blistering, ulceration, and tissue destruction.

Serious eye damage/irritation

Acute and delayed symptoms and effects: Causes serious eye damage. Signs/symptoms may include cloudy appearance of the cornea, chemical burns, severe pain, tearing, ulcerations, significantly impaired vision or complete loss of vision.

Respiratory or skin sensitization

No data available.

Germ cell mutagenicity

No data available.

Carcinogenicity

IARC: The International Agency for Research on Cancer (IARC) has determined that occupational exposure to strong inorganic-acid mists containing sulfuric acid is carcinogenic to humans (group 1).

Safety Data Sheet

Sulfuric acid, 10 - 51%

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity

No data available.

STOT-single exposure

No data available.

STOT-repeated exposure

No data available.

Aspiration hazard

No data available.

Additional information

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema, burning sensation, Cough, wheezing, laryngitis, Shortness of breath, Headache, Nausea, Vomiting, Pulmonary edema. Effects may be delayed., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
Stomach - Irregularities - Based on Human Evidence

SECTION 12: Ecological information

Toxicity

Components:

Sulfuric acid

LC50 - *Gambusia affinis* (mosquito fish) - 42 mg/l - 96 h

EC50 - *Daphnia magna* (water flea) - 29 mg/l - 24 h

Persistence and degradability

The methods for determining the biological degradability are not applicable to inorganic substances.

Bioaccumulative potential

No data available.

Mobility in soil

No data available.

Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

SECTION 13: Disposal considerations

Disposal of the product

Disposal should be in accordance with applicable Federal, State and local laws and regulations. Local regulations may be more stringent than State or Federal requirements.

Disposal of contaminated packaging

Safety Data Sheet
Sulfuric acid, 10 - 51%

Dispose of as unused product.

SECTION 14: Transport information

DOT (US)

UN Number: 1830
Class: 8
Packing Group: II
Proper Shipping Name: Sulfuric acid
Reportable quantity (RQ): 1000 lb
Poison inhalation hazard: No

IMDG

UN Number: 1830
Class: 8
Packing Group: II
EMS Number: F-A, S-B
Proper Shipping Name: Sulfuric acid

IATA

UN Number: 1830
Class: 8
Packing Group: II
Proper Shipping Name: Sulfuric acid

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

SARA 302 Components

The following components are subject to reporting levels established by SARA Title III, Section 302:

Sulfuric acid
CAS number: 7664-93-9

SARA 313 Components

The following components are subject to reporting levels established by SARA Title III, Section 313:

Sulfuric acid
CAS number: 7664-93-9

SARA 311/312 Hazards

Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

Sulfuric acid
CAS number: 7664-93-9

Pennsylvania Right To Know Components

Sulfuric acid
CAS number: 7664-93-9

New Jersey Right To Know Components

Sulfuric acid
CAS number: 7664-93-9

California Prop. 65 Components

WARNING! This product contains a chemical known to the State of California to cause cancer.

Safety Data Sheet
Sulfuric acid, 10 - 51%

Sulfuric acid
CAS number: 7664-93-9

SECTION 16: Other information

Further information/disclaimer

DISCLAIMER: The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigation to determine the suitability of information for their particular purposes. In no event shall RKI Instruments, Inc. be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, whatsoever arising, even if RKI Instruments, Inc. has been advised of the possibility of such damages.