

CLIP, Chemical Laboratory Information Profile

"Only when you know the hazards, can you take the necessary precautionary measures."

Sulfuric Acid (approx. 98%)



CAS No.: 7664-93-9

Synonyms: oil of vitriol, battery acid, hydrogen sulfate

Physical Properties

Colorless, oily, hygroscopic, viscous liquid
 Vapor pressure at 20 °C: negligible
 Melting point: 10.5 °C
 Boiling point: 290 °C
 when anhydrous, decomposes at > 330 °C

Exposure Limits

OSHA PEL: 1 mg/m³ (mist)
 ACGIH TLV: 1 mg/m³ (mist)

Hazardous Characteristics

Overall toxicity	Flammability	Destructive to skin/eye	Absorbed through skin	Sensitizer?	Self-reactive?	Incompatible with:
3	0	4	No	No	No	Water, bases, flammables, combustibles, some oxidizing agents, many metals*

0: None (or very low); 1: Slight; 2: Moderate; 3: High; 4: Severe

*Reaction with:

- Water is violently exothermic.
- Bases is violently exothermic.
- Many organic compounds, causes ignition of those compounds; explosions are possible. Some organic materials, e.g., wood, sugar, cotton fabrics; chars such materials.
- Oxidizers such as chlorates, fulminates, permanganates, is often violent.
- Many metals is corrosive.
- Finely divided metals can be rapid and exothermic.
- The hydrogen so produced is explosive. (Note that diluted acid is less vigorously reactive, but is hazardous nevertheless.) See Bretherick's *Handbook of Reactive Chemical Hazards* for details and for other incompatibilities.

Cited as known to be or reasonably anticipated to be carcinogenic in NTP-9?

No

Identified as a reproductive toxin in Frazier and Hage, *Reproductive Hazards of the Workplace*?

No

Typical symptoms of acute exposures:

Rapid tissue destruction of eyes, skin, or mucous membranes with pain, severe discomfort, or stinging sensation. Difficulty in breathing if mist is inhaled; may cause lung oedema; note that symptoms of lung oedema may be delayed. Acidic or sour taste if in mouth with destruction of teeth and mouth tissues. Sore throat and/or abdominal pain if swallowed.

Principal target organ(s) or system(s):

Eyes, skin, respiratory system, teeth.

Storage Requirements

With other inorganic acids (except oxidizing acids such as nitric, perchloric) separate from organic compounds, strong oxidizing agents, and bases in a cool, dry, well-ventilated location.

Additional Remarks

Always prepare diluted sulfuric acid only with continuous stirring and slow addition of acid to water. Never add water to acid. When heated strongly and when in a fire, sulfuric acid produces irritating and toxic sulfur oxide fumes.

Notes

ReadMe

This Chemical Laboratory Information Profile is *not* a Material Safety Data Sheet. It is a brief summary for teachers and their students that describes some of the hazards of this chemical as it is typically used in laboratories. On the basis of your knowledge of these hazards and before using or handling this chemical, *you need to select the precautions and first-aid procedures to be followed*. For that information as well as for other useful information, refer to Material Safety Data Sheets, container labels, and references in the scientific literature that pertain to this chemical.

Reproductive Toxins

Some substances that in fact are reproductive toxins are not yet recognized as such. For the best readily available and up-to-date information, refer to "DART/ETIC". See the TOXNET home page at www.sis.nlm.nih.gov and click on "Toxicology search". *Note that some of the data in DART/ETIC have not been peer-reviewed*. See also Linda M. Frazier and Marvin L. Hage, *Reproductive Hazards of the Workplace*; Wiley, 1998; and T. H. Shepard, *Catalog of Teratogenic Agents*, 9th ed.; Johns Hopkins University Press, 1998.

Abbreviations

ACGIH TLV—American Conference of Governmental Industrial Hygienists—Threshold Limit Value. C—Ceiling. CAS—Chemical Abstracts Service. mg/m³—milligrams per cubic meter. NA—Not applicable. NE—Not established. NI—No information. NTP-9—National Toxicology Program, Ninth Annual Report on Carcinogens. OSHA PEL—Occupational Safety and Health Administration—Permissible Exposure Limit. ppm—parts per million. STEL/C—Short-term exposure limit and ceiling.

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