

MATERIAL SAFETY DATA SHEET

IDENTIFICATION

NAME

Sulfuric Acid, 77 to 100%

GRADE60° Tech., 66° Tech.,
1.835 Electrolyte, 98% Tech.,
99% Tech., 100% Tech.**CAS REGISTRY NO.**

7664-93-9

CAS NAME

Sulfuric Acid

I.D. NOS./CODES

NIOSH Registry No.: WS5600000

MANUFACTURER/DISTRIBUTOR

E. I. du Pont de Nemours & Co. (Inc.)

ADDRESS

Wilmington, DE 19898

CHEMICAL FAMILY

Mineral Acid

FORMULAH₂SO₄**TSCA INVENTORY STATUS**

Reported/Included

SARA/TITLE III STATUSSee ADDITIONAL INFORMATION and
HAZARDOUS COMPONENTS sections**PRODUCT INFORMATION PHONE**

(800) 441-9442

MEDICAL EMERGENCY PHONE

(800) 441-3637

TRANSPORTATION EMERGENCY PHONE

CHEMTREC (800) 424-9300

PHYSICAL DATA

BOILING POINT, 760 mmHg193°C to 327°C (380°F to 621°F)
See page 2 for specific grades**SPECIFIC GRAVITY**1.70 to 1.85
See page 2**VAPOR DENSITY**

3.4

pH INFORMATION

<1

FORM

Liquid

COLOR

Colorless to light gray

MELTING POINT-35°C to 11°C (-31°F to 51°F)
See page 2**VAPOR PRESSURE**<0.3 mmHg at 25°C (77°F)
<0.6 mmHg at 38°C (100°F)**SOLUBILITY IN WATER**

100%

EVAPORATION RATE (Butyl Acetate = 1)

<1

APPEARANCE

Oily; clear to turbid

ODOR

Odorless

JAN 14 1991

PHYSICAL PROPERTIES (FROM PAGE 1)

	<u>Grade</u>	<u>Boiling Point</u>		<u>Melting Point</u>		<u>Specific Gravity</u>
		<u>°C</u>	<u>°F</u>	<u>°C</u>	<u>°F</u>	
60°	Technical	193	380	-12	10	1.706
66°	Technical	279	535	-35	-31	1.835
1.835	Electrolyte	279	535	-35	-31	1.835
98%	Technical	327	621	-2	29	1.844
99%	Technical	310	590	4	40	1.842
100%	Technical	274	526	11	51	1.839

HAZARDOUS COMPONENTS

<u>MATERIAL(S)</u>	<u>CAS NO.</u>			<u>APPROXIMATE %</u>
Sulfuric Acid*	7664-93-9	60°	Technical	77.7
		66°	Technical	93.2
		1.835	Electrolyte	93.2
		98%	Technical	98.0
		99%	Technical	99.0
		100%	Technical	100

*Regulated as a Toxic Chemical under Section 313 of Title III/SARA, and 40 CFR Part 372.

NONHAZARDOUS COMPONENT

Water	7732-18-5	0-22
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HAZARDOUS REACTIVITY

INSTABILITY

Stable, but reacts violently with water and organic materials with evolution of heat.

INCOMPATIBILITY

Vigorous reactions occur with water; alkaline solutions; metals; metal powders; carbides; chlorates; fulminates; nitrates; picrates; strong oxidizing, reducing, or combustible organic materials. Hazardous gases are evolved on contact with chemicals such as cyanides, sulfides, and carbides.

DECOMPOSITION

Releases sulfur dioxide at extremely high temperatures.

POLYMERIZATION

Will not occur.

FIRE AND EXPLOSION DATA

FLASH POINT

Will not burn.

FLAMMABLE LIMITS IN AIR, % BY VOL.

LOWER Not applicable.

UPPER Not applicable.

AUTOIGNITION TEMPERATURE

Not applicable.

AUTODECOMPOSITION TEMPERATURE

Not available.

FIRE AND EXPLOSION HAZARDS

Reacts with most metals, especially when dilute, to give flammable, potentially explosive hydrogen gas.

EXTINGUISHING MEDIA

Use media as appropriate for combustibles in area. Use water spray to cool containers exposed to fire; do not get water inside containers.

SPECIAL FIREFIGHTING INSTRUCTIONS

Evacuate personnel to a safe area. Keep personnel removed and upwind of fire. Generates heat upon addition of water, with possible spattering. Wear full protective clothing. Runoff from fire control may cause pollution. Neutralize runoff with lime, soda ash, etc., to prevent corrosion of metals and formation of hydrogen gas. Wear self-contained breathing apparatus (SCBA) if fumes or mists are present.

HEALTH HAZARD INFORMATION

PRINCIPAL HEALTH HAZARDS (Including Significant Routes, Effects, Symptoms of Overexposure, and Medical Conditions Aggravated by Exposure)

Causes severe burns to eyes, skin and all body tissues. Inhalation of mist may cause lung damage.

Inhalation 1-hour LC₅₀: 347 ppm in rats

Oral LD₅₀: 2140 mg/kg in rats

The concentrated compound is corrosive to the skin and the eye of animals. By ingestion it is moderately toxic in animals causing corrosion of mucosal surfaces. Toxic effects described in animals from single exposures by inhalation include respiratory irritation. Animal testing indicates that this compound does not have the potential to produce carcinogenic, mutagenic, embryotoxic, or reproductive effects.

Human health effects of overexposure to the liquid by skin or eye contact may cause eye corrosion with corneal or conjunctival ulceration; or skin burns or ulceration. Ingestion of the liquid may cause severe burns to the mucous membranes of the mouth and esophagus. Repeated or prolonged contact with mists may cause eye irritation with discomfort, tearing, or blurring of vision; or skin irritation with discomfort or rash. Human health effects of overexposure by inhalation may include irritation of the upper respiratory passages or erosion of dental surfaces. Higher exposures by inhalation may lead to temporary lung irritation effects with cough, discomfort, difficulty breathing, or shortness of breath; or possibly modest initial symptoms, followed in hours by severe shortness of breath, requiring prompt medical attention.

HEALTH HAZARD INFORMATION (cont'd)

Although two epidemiology studies did suggest a possible association between sulfuric acid exposure and respiratory tract tumors, conclusions from these studies are very limited because of significant deficiencies. In one study for example, only a small number of workers was sampled, and there was exposure to other materials including diethyl sulfate, an IARC and NTP carcinogen. In the other study there was exposure to other acids, plus the smoking histories of the workers were ignored in the development of the study conclusion. Based on the overall weight of evidence from all human and chronic animal studies, we conclude that no causal relationship between sulfuric acid exposure and respiratory tract tumors has been shown.

Individuals with preexisting diseases of the lungs may have increased susceptibility to the toxicity of excessive exposures.

CARCINOGENICITY

Not listed as a carcinogen by IARC, NTP, OSHA, or ACGIH.

EXPOSURE LIMITS [PEL (OSHA), TLV (ACGIH), AEL (DU PONT), ETC.]

OSHA 8-hour Time Weighted Average (TWA) and ACGIH TLV^(R)-TWA are 1 mg/m³ (ACGIH STEL = 3 mg/m³). The Du Pont AEL 8 and 12-hour TWA is 1 mg/m³.

SAFETY PRECAUTIONS

Do not get in eyes, on skin, on clothing.

Avoid breathing vapor or mists.

Keep containers closed.

Do not add water to contents while in container because of violent reaction.

Wash thoroughly after handling.

FIRST AID

In case of contact: immediately (within seconds) flush the skin or eyes with plenty of water (preferably cold water) for at least 15 minutes while removing contaminated clothing and shoes. Call a physician. Wash clothing before reuse.

While the patient is being transported to a medical facility, apply compresses of iced water. If medical treatment must be delayed, immerse the affected area in iced water. If immersion is not practical, compresses of iced water can be applied. Avoid freezing tissues.

Note to Physician: Continued washing of the affected area with cold or iced water will be helpful in removing the last traces of sulfuric acid. Creams or ointments should not be applied before or during the washing phase of the treatment.

If inhaled: Remove to fresh air immediately and have patient lie down and remain quiet. Apply artificial respiration if breathing has stopped. Give oxygen if breathing is difficult. Call a physician.

If swallowed: Do not induce vomiting. Give large quantities of water. Call a physician. Do not give carbonates. Never give anything by mouth to an unconscious person.

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PROTECTION INFORMATION

GENERALLY APPLICABLE CONTROL MEASURES

Good general ventilation should be provided to keep vapor and mist concentrations below the exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Have available and wear as appropriate for exposure conditions when handling containers or operating equipment containing sulfuric acid: chemical splash goggles; full-length face shield/chemical splash goggle combination; acid-proof gauntlet gloves, apron, and boots; long sleeve wool, acrylic, or polyester clothing; acid-proof suit and hood; and OSHA permissible respiratory protection. In case of emergency or where there is a strong possibility of considerable exposure, wear a complete acid suit with hood, boots, and gloves. If acid vapor or mist are present and exposure limits may be exceeded, wear OSHA permissible respiratory protection.

DISPOSAL INFORMATION

AQUATIC TOXICITY

The 48-hour TLm in flounder is 100-300 ppm.

SPILL, LEAK OR RELEASE

Stop flow if possible. Review "Fire and Explosion Hazards" and "Safety Precautions" before proceeding with clean up. Use appropriate protective equipment during clean up. Soak up small spills with dry sand, clay, or diatomaceous earth. Dike large spills and cautiously dilute, neutralize with lime or soda ash, and transfer to waste water treatment system. Prevent liquid from entering sewers, waterways, or low areas. Comply with Federal, State, and local regulations on reporting releases. Superfund reportable discharge is 1000 lbs.

WASTE DISPOSAL

Cleaned-up material is a RCRA Hazardous Waste. Do not flush to surface water or sanitary sewer system. Comply with Federal, State, and local regulations. If approved, neutralize and transfer to waste treatment system.

SHIPPING INFORMATION

DOT (172.101)

PROPER SHIPPING NAME

Sulfuric Acid

HAZARD CLASS

Corrosive Material

UN NO.

1830

DOT LABEL(S)

Corrosive

DOT PLACARD (TT/TC)

Corrosive

DOT/IMO (172.102)

PROPER SHIPPING NAME

Sulphuric Acid

HAZARD CLASS

Corrosive Material, 8

UN NO.

1830

PACKAGING GROUP II

SHIPPING INFORMATION (cont'd)

REPORTABLE QUANTITY

1000 lb/454 kg

SHIPPING CONTAINERS

Tank cars, tank trucks, 55 gallon stainless steel drums.

ADDITIONAL INFORMATION AND REFERENCES

STORAGE CONDITIONS

Keep out of sun and away from heat, sparks, and flame. Keep container tightly closed and (drum) closure up to prevent leakage. Loosen closure carefully. Relieve internal pressure when received and at least weekly thereafter. Do not use pressure to empty. Be sure closure is securely fastened before moving container. Do not wash out container or use it for other purposes; replace closure after each withdrawal and return it with empty container.

NPCA - HMIS RATINGS

Health (Acute) 3
Flammability 0
Reactivity 2
Personal Protection -

NFPA RATINGS

Health 3
Flammability 0
Reactivity 2
Unusual Hazards W

Personal Protection rating to be supplied by user depending on use conditions.

SARA/TITLE III HAZARD CATEGORIES AND LISTS

Product Hazard Categories:

Chronic Health - Yes
Acute Health - Yes
Fire Hazard - No
Pressure Hazard - No
Reactivity Hazard - Yes

Lists:

Extremely Hazardous Substance - Yes
CERCLA Hazardous Substance - Yes
Toxic Chemical - Yes

For further information, see Du Pont Sulfuric Acid "Storage and Handling Bulletin."

DATE OF LATEST REVISION/REVIEW:
PERSON RESPONSIBLE FOR MSDS:

10/88
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