

# WATER GUARD, INC

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## TECHNICAL BULLETIN ~ SULFURIC ACID

SULFURIC ACID is a clear, colorless to cloudy liquid that is highly corrosive to most metals. The term Sulfuric Acid covers both H<sub>2</sub>SO<sub>4</sub> and water solutions of this compound. The liquid's strength, or percent Sulfuric Acid, is primary quality parameter for use. The approximate strength of most solutions is typically estimated with the use of a hydrometer.

Sulfuric acid is an extremely corrosive material, but it can be handled safely if the proper precautions are observed. Any person involved in the transportation of sulfuric acid must be trained in accordance with DOT Hazardous Materials Employee Training (HM-126F), 49 CFR 172, Subpart H.

There are two different types of sulfuric acid solutions available: *Virgin* and *Spent*. Virgin acid is sulfuric acid that has never been used in a process. It is a commodity called *commercial grade sulfuric acid*. Sulfuric acid that has been used in a process is called "spent acid." This term is misleading because spent acid may retain full acid value, but it often contains impurities depending on the generator. Water Guard offers two concentrations of commercial grade sulfuric acid with their properties listed below

### REGISTRATIONS

#### National Sanitation Foundation:

Water Guard's Sulfuric Acid is NSF certified and meets ANSI/NSF standards for use in drinking water systems. This product is certified for potable water use by NSF International for Corrosion and Scale Control at a maximum dosage rate of 100mg/L.

### PHYSICAL AND CHEMICAL PROPERTIES

Percent H <sub>2</sub> SO <sub>4</sub>	35%	93%
Degree Baume	30.30	66
Density (lb./gal. at 15.6°C)	10.53	15.29
Specific Gravity	1.26	1.84
Freezing Point	-57° C (-70° F)	-32°C (-26°F)
Solubility in H <sub>2</sub> O	Complete	Complete

### DILUTION

Except when large quantities of water are used to dilute spills, water or alkaline solutions containing water should never be added to sulfuric acid. A violent reaction will take place which may cause spattering to occur. If it is necessary to mix acid and water, the acid should always be slowly added to the water. Care should be taken to ensure that acid leaks, spills, or drainage do not come in contact with sulfide materials, because of the danger of evolving toxic and flammable hydrogen sulfide gas.

### TANKS

Due to the relatively high specific gravity of 93% sulfuric acid, special consideration should be given to its containment. 93% sulfuric acid should be stored in tanks capable of holding liquids greater than 1.84 specific gravity. Polyethylene tanks require a coating due to sulfuric acid's properties causing the polyethylene to turn black in color.

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## **TECHNICAL BULLETIN ~ SULFURIC ACID**

### **STORAGE**

All employees who handle this material should be trained to handle it safely. Avoid breathing sprays or mists generated by this product. Store containers in a cool, dry location away from direct sunlight, sources of intense heat, and where freezing is possible. Keep container tightly closed when not in use. Avoid contact with leather, wool, and incompatible material. Store away from incompatible chemicals. Wash hands thoroughly after using this material. Workers must be thoroughly trained to handle this material without causing over exposure.

### **HANDLING**

All hazardous materials require safe and trained handling, and Sulfuric Acid is no exception. Anyone within proximity of the transport and pumping of this product must have all protective equipment securely on and all handlers must read and understand the material safety data sheet.

*The following should be observed when using and storing Sulfuric Acid*

- Always avoid direct personal contact with sulfuric acid
- Always wear the required protective equipment
- Always ensure the immediate availability of an adequate water supply
- Always avoid ignition sources
- Always add acid to water, never water to acid.

### **HAZARD IDENTIFICATION**

**INHALATION:** If mists or sprays of this solution are inhaled, this product may cause pulmonary irritation, irritation of the mucus membranes, coughing, and sore throat. Damage to the tissues of the respiratory system may occur.

**CONTACT WITH SKIN AND EYES:** Contact with the eyes will cause irritation, pain, and reddening. Prolonged exposure of the eyes may result in blindness. Skin contact may result in burning, reddening, severe discomfort, and irritation. Prolonged exposure may result in ulcerating burns which could leave scars.

**SKIN ABSORPTION:** No component of this solution can be absorbed through the skin.

**INGESTION:** Burning and irritation of the mouth, throat, esophagus, and other tissues of the digestive system