

Sulfuric Acid Special Precautions For Handling and Storage!

Fire and explosion hazards:

The acid itself is not flammable, but in its higher concentrations may cause ignition by contact with combustible materials. It should therefore be isolated from organic materials, (paper, wood, etc.) and such products as nitrates, carbides, chlorates, and metallic powders.

Hydrogen is generated by the action of the acid on most metals. As hydrogen will form explosive mixtures with air under certain conditions, smoking should not be permitted near open drums or tanks. Bursting of containers can be caused by expansion due to heat or vapor pressure. This expansion can result from filling containers too full and not leaving sufficient air space in the drum; from use of air pressure for emptying; from internal pressure as a result of storing over too long a period without periodically venting.

Drum handling and storage:

Labels state precautions that should be taken for safe handling and storage of drums of sulfuric acid.

More specific precautions are as follows: Inspect drums for loose plugs and signs of leakage or damage before moving. Set aside for special handling if damage is found. Tighten loose plugs.

Avoid rough handling of drums. Do not drop. Before emptying contents, substantially support the drums and block them to prevent movement.

Drums should be stored with the plugs up. Storage periods of sulfuric acid in drums should be kept to a minimum.

Drum storage outside of buildings should be avoided. Small amounts of water entering a drum of sulfuric acid could cause an explosion.

Loosen plugs on the stored drums weekly, more frequently in hot weather, to release pressure that may build up in drums.

Special drum vents can be used to relieve pressure buildup in drums. The plug can be removed and the vent installed, when the drum is put in storage. This will provide automatic venting when pressures exceed 5 pounds per square inch. Special metals must be used in the construction of the vents to prevent corrosion.

Drums should be emptied by gravity only with the use of a faucet or safety siphon fabricated of material resistant to sulfuric acid. Application of pressure to the drum to remove the acid is extremely dangerous and should never be attempted.

Never strike a drum with a tool or other hard object to loosen plugs, as resulting sparks may ignite the flammable hydrogen gas which is likely to be in the drum.

Precautions: Tank storage.

Steelwork in the vicinity of sulfuric acid tanks should be protected with an acid resistant paint.

Provision should be made for washing down spills with large quantities of water.

Provision should be made for access to tank tops.

Tanks should be equipped with breather vents so located that accidental overflow will be discharged into a trench, sump or other safe location. When such breather vents are provided for, there should also be an atmospheric vent pipe, which cannot be valved shut or otherwise closed.

Buildings containing sulfuric acid tanks should be well vented to the atmosphere.

Do not leave spilled sulfuric acid unattended. All spillage should be removed immediately by flushing the contaminated area with copious quantities of water, or the contaminated area covered with dry sand, ashes or gravel, if the use of water is impossible. Remaining traces of acid should be neutralized with soda ash or lime. Do not use combustibles such as cloths, sawdust, or other organic materials for "mopping up."

Sulfuric acid tanks should be located away from tanks containing acetone, alcohol, and organic compounds which will react with concentrated sulfuric acid.

Employee training

Employees should be thoroughly informed of the hazards that may result from the improper handling of sulfuric acid. They should be cautioned to prevent spills and thoroughly instructed regarding proper action to be taken in case spills occur.

Personal protective equipment is important, but it is not an adequate substitute for safe working conditions, adequate ventilation and intelligent conduct on the part of employees working with sulfuric acid. However, in many instances, personal protective equipment is the only practical means of safeguarding the worker, particularly in emergency situations.

Sulfuric acid is dangerous when improperly handled. Concentrated solutions are rapidly destructive to tissues with which they come in contact, producing painful burns. Contact with the eyes will cause severe damage and may result in total loss of sight. Swallowing may cause injury or death.

Inhalation of concentrated vapor from hot acid or oleum may cause rapid loss of consciousness with serious damage to lung tissues. Individual sensitivity to vapor is variable. Workers exposed to low concentrations gradually lose their sensitivity to the irritant action. Repeated contact with diluted solutions may cause dermatitis (skin disease). Repeated inhalation of mist may cause a chronic inflammation of the upper respiratory tract and chronic bronchitis.

Safety in handling sulfuric acid depends, to a great extent, upon the effectiveness of employee education, proper training in safe practices and the use of safe equipment.

The loss prevention information and advice presented in this brochure are intended only to advise our insureds and their managers of a variety of methods and strategies based on generally accepted safe practices, for controlling potentially loss producing situations commonly occurring in business premises and/or operations. They are not intended to warrant that all potential hazards or conditions have been evaluated or can be controlled. They are not intended as an offer to write insurance coverage for such conditions or exposures, or to imply that Great American Insurance Company will write such coverage. The liability of Great American Insurance Company is limited to the specific terms, limits and conditions of the insurance policies issued.