

Sulfuric Acid Pumps

Sulfuric Acid is the largest tonnage inorganic chemical manufactured and is probably the most important, being the starting point for many other products.

Concentrated sulfuric acid, as an industrial product, is manufactured and shipped as either 93 or 98.5% acid. Oleum is fuming sulfuric acid, containing excess combined sulfur trioxide, and is shipped as 20-65% oleum.

The basic reaction for manufacture of sulfuric acid by the contact process is the combustion of sulfur with dry air to sulfur dioxide, catalytic conversion to sulfur trioxide, and absorption of the product in strong acid. The final products are 98.5% acid and oleum, while 93% acid is produced by dilution in the air-drying tower.

Pump Model

The Taber Series 1000 is the pump of choice. The preferred speed is 1800 rpm. We can supply a Series 8000, which has the added feature of a triple throat casing for reduced radial loads. The pump can also be operated at 1200 and 3600 RPM, consult factory for support.

Pump Selection and Application

- **Materials of Construction:** All wetted parts should be per the attached selection guide: CI/316SS can be used for high concentrations and low temperatures or Hastelloy B should be used for higher temperatures and/or concentrations. Special two piece shafts might be required for longer settings, above 12 feet. The support plate can be 316SS clad for extra protection. All hardware below the support plate should be 316SS. Most pumps are Vapor Proof Construction. Contact the factory for specific material selection.
- **Bearing Materials:** Bearing materials made of Glass-Filled Teflon (GFT) or Carbon Graphite should be used. There are other sleeve bearing materials and bearing retainer materials available. Contact factory for support.
- **Support Column and Discharge Pipe:** Standard support column and discharge pipe can be used. No jacketing is required.
- **Stuffing Box and Sealing:** We require using a single stuffing box as a minimum to contain the fumes and vapors. Optional double stuffing boxes or Gas Barrier Mechanical Seals are available.
- **Couplings:** Standard couplings can be used. Typically Woods Sure-Flex type 'S'.
- **Motors:** Standard TEFC or TEFC Chem Duty motors are generally used. Any enclosure can be considered. We recommend a class "F" insulation. Make sure that you account for the high specific gravity in the horsepower calculations. The S.G. used is 1.84 max. for horsepower calculations. Also we recommend that a motor service factor of 1.15 be used.

Application Considerations

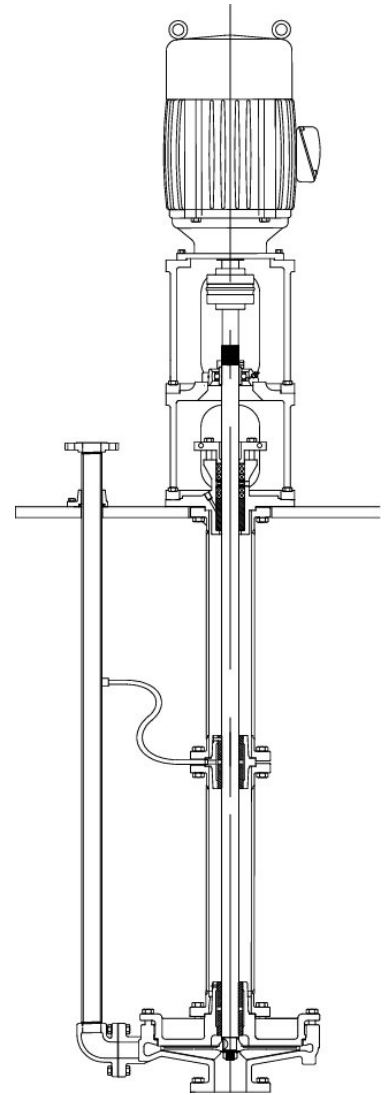
- ✓ Most Sulfuric Acid applications are between 50-250 degF.
- ✓ The S.G. can range from 1.1 to 1.9. You should have the customer confirm the S.G. so that we can correctly size the motor.
- ✓ Sulfuric Acid is a strong irritant to the eyes, skin, etc. It is highly toxic by ingestion.

- ✓ The coupling should be a Woods type S or equivalent.
- ✓ Due to the potential high temperature, special impeller settings may be made to allow for the “growth” of the shaft/impeller assembly. As standard procedure, the pump is placed in the pit and allowed to reach the application temperature, before setting the impeller clearance. Contact the factory for your specific pump application.

Reference List and Installation List

The following are the companies that have successfully applied these pumps

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| Texas Eastman | Hoechst |
| Merck & Co. | Gulf Power |
| Detroit Edison | Andrew Jurgens |
| Buffalo Color | Iowa-Illinois Gas |
| Purex Corp | Allegheny Ludlum Steel |
| Hilton-Davis Chemical | Hungerford |
| Lummus Crest | Infilco Degrement |
| E.I. Dupont | Reichold Chemicals |
| Gaco Systems | Lederle Labs |
| Allied Fibers | Gulf States Paper |
| BASF | Monsanto |
| Kerr McGee | Tennessee Eastman |



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