

LABORATORY AIR FLOW CONTROLS AND CORROSION RESISTANCE

APPLICATION NOTE LC-131

Choosing materials for devices exposed to corrosive airstreams can be a challenging task. In an ideal situation, you would know the chemicals used and the exposure conditions in order to best balance cost and service life. However, chemicals used in the life of a laboratory will change, sometimes even while constructing the laboratory. Therefore, choose laboratory airflow control devices that are resistant to a wide range of chemicals.

Selecting construction material when working with dampers is relatively easy. Engineers following common practices use dampers constructed from the same material as the duct. For example, if the ductwork is made from 304 stainless steel, the dampers would also be constructed from 304 stainless steel. Protective coatings on metal dampers can be effective, although a certain amount of care is needed during installation—scratches and other mechanical damage must be repaired to prevent bare metal exposure.

Stainless steel construction is not an option with venturi valves. Protective coatings are the only choice. The laboratory controls industry has standardized on a baked phenolic coating manufactured by Heresite Protective Coatings, Incorporated. This coating is routinely used to protect metal when immersed in corrosive materials.

TSI's manufacturing process puts a 3 mil layer of Heresite phenolic on the valve body, valve cone, shaft supports and the spacer on the central rod. The shaft itself is coated with Teflon for corrosion resistance and low friction. These coatings protect the venturi valve from corrosive chemicals in the airstream. This level of protection matches, or is better than, any other standard product offering from major manufacturers in the Critical Environments Controls industry.

These guidelines cannot guarantee acceptable service life. Certain operations, such as acid digestion, may require facilities maintenance to periodically inspect and clean dampers or venturi valves in the contaminated airstream. In addition, control devices should not be used on perchloric acid fume hoods due to the potential hazard from accumulating potentially explosive residues even if the HVAC system has a water spray system.





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