

Product Bulletin

Materials and Safety For Peroxyacetic Acid

This product bulletin is intended to help the service technician and safety coordinator to determine the proper handling procedures and materials of construction when utilizing Heritage Systems' LANCER® 5% peroxyacetic acid products.

ELASTOMERS:

Most synthetic and/or elastomeric material have extremely variable resistance to solutions of peroxyacetic acid. Sometimes the same material may have different resistance due to manufacturer's raw material base or differences in manufacturing techniques. However the general material resistance is given below, starting from the best to worst:

Teflon > Teflon encapsulated viton or EPDM > norprene > EPDM > silicone > viton (failure)

TUBING:

The only synthetic tubing recommended by Heritage Systems is Teflon based. FEP or PFA Teflon tubing has good pressure and wear resistance, and is UV and weather resistant. Low density polyethylene tubing is not recommended for peracetic acid solutions (PAA). High density polyethylene has relatively good resistance to PAA but will become brittle with time. Never use any synthetic tubing for PAA other than those discussed above.

PLASTIC FITTINGS:

"Jaco" brand high pressure polypropylene tubing fittings give very good service life. If they are used in the direct sunlight they should be wrapped with electrical tape or similar material to prevent UV degradation. Do not use Nylon or acetal-type fittings. Parker brand (black) fittings are not recommended. Kynar (PVDF) fittings are acceptable, but take care to tighten the fitting nuts with tools, as they are difficult to torque down on tubing.

PIPING:

316L stainless tubing is the product of choice for transporting concentrated PAA over distances. Compression fittings should be stainless/Teflon only. If piping is used, 304 stainless fittings are acceptable. However, PAA should never be confined between two points, such as between valves. In such cases a pressure relief device should be installed set at slightly higher pressure than the operating parameters.

Never use brass, copper, iron, or galvanized metal of any kind that will contact even the most dilute solution of PAA.

Commercial grade schedule 40 or 80 PVC may be used to pipe PAA solutions. However, there is a large variation by different manufacturers with the type of plasticizer they use, so keep in mind all PVC is NOT equal. Therefore, if you are piping the concentrated material using PVC materials, you must evaluate your supplier's PVC resistance to the effects of PAA.

Therefore, we recommend, as a rule, that PVC is acceptable to use for diluted solutions, but it is not recommended for concentrated PAA unless you have tested and certified that your manufacturer's PVC products are acceptable for such use.

HOSES:

Only Teflon lined chemical hoses are approved for use with PAA solutions. Soft (braided) PVC and vinyl hoses are degraded by PAA and are not recommended.

PUMPS:

All pumps considered for use with PAA should have Teflon diaphragms and Teflon/polypropylene/kynar liquid contacting parts. Do not use elastomer composite material for seats or gaskets other than Teflon.

Peristaltic pumps are not recommended. The squeeze tubes cannot handle the concentrated PAA solutions or pressures (over time) using any squeeze tube elastomer.

LMI pumps have proven to be unreliable. They only have 1 ball-seated check valve, are extremely difficult to prime, and lose prime easily with peroxygen products.

Pulsafeeder-type pumps with double seated check valves and a degassing head has shown good performance in the field.

Double diaphragm air driven pumps with Teflon wet-end parts are acceptable.

Hint: When using any type of diaphragm pump, always set the stroke length to at least 80%, and adjust the feed rate using the speed control only. (This setting will purge the chamber and valves on each stroke). Otherwise, 'air-lock' will occur even while the pump is in operation.

Air driven diaphragm pumps with a restricting orifice have proven quite reliable in the field.

STORAGE:

PAA solutions should be kept in cool environments when possible.

Never store a PAA drum outdoors in a bright sunlight without protecting the tops from direct sun. Sunlight will increase the temperature in the headspace of a drum, and the gas will expand faster than the venting membrane devices will allow. The result is excessively swollen drums. Pail products normally do not create this phenomenon.

MISCELLANEOUS SAFETY:

NEVER place or pour *concentrated* PAA solutions into any type of other holding device, such as 'shot' feeders, day tanks, or any other type of container, unless it is dedicated for PAA and is made of compatible materials.

As a rule, add PAA solutions to water only.

NEVER return PAA solutions back to the original container once it is removed. The slightest contamination may degrade the product remaining in the drum, or may set off a decomposition reaction, which evolves oxygen and heat...enough heat to melt a plastic drum !

ALWAYS wear gloves, goggles or faceshield, and other appropriate chemical resistant gear when handling peroxyacetic acid products.

ALWAYS instruct a customer or end-user of the safety and handling procedures for PAA prior to using these products.