

## Why do you not use a cleaning process with RSA vials - FAQ

When Autosampler Vials are manufactured from high purity glass tubing, to eliminate the vertical and horizontal strain on the vials, they must be annealed using heat that is between 1,200 - 1,400°F. At this temperature all organic material is burned off and eliminated leaving vials as clean as can possibly be.

However, if the proper application of heat and other factors are not followed, many hydroxyl groups or silanols may be formed on the surface of the glass. RSA™ vials are made with a patent pending process whereby this layer that forms on ordinary glass vials is never formed. This surface is problematic for GC, GCMS, HPLC, LCMS and mostly LCMS/MS as it can cause metals to accumulate at the vial surface that can cause adducts in MS, can permanently adsorb basic compounds, especially in low abundance and cause pH shifts in DI water due the dissociation of surface sodium and hydroxides and water to form NaOH.

Some vial manufacturers will use a cleaning process to purge it of glass particulates (silicate that delaminates) in hopes of making these vials more MS compatible but this very cleaning process can reintroduce organic contaminants to the vial's inner surface which may be detected in the chromatographic runs. Also, the rinsing step of any "cleaning" process will also reintroduce contaminants to the vials.

If a "cleaning" process uses acids or surfactants, it is impossible to remove all residual materials from the cleaning solution which actually will degrade the "cleanliness" of the vials. In addition, after rinsing or "cleaning" the vials the drying process will also reintroduce contaminants from air or any other gas used. If particulates are visible in any autosampler vial, they would indicate that best practices in manufacturing are not followed. The source of the organic particles would be from the air, the vial machines, the gas used for flames in the forming step or from the "cleaning" process.

RSA glass vials do not undergo a "cleaning process" since they do not have the surface activity thus leaving them to be the "cleanest" vials available as well as least reactive. Due to the "precision manufacturing" and the slower rate of production used for RSA limited vials and inserts, petroleum lubricants normally used during the "heating phase" is not used. Petroleum lubricants (grease and oil) introduce organic material into the non RSA vials.

RSA vials are packaged immediately from the Lehr oven in a Class 100,000 clean room by robots and are never touched by human hands. The entire manufacturing process is ISO Certified.

*It is important to remember that low cost vials are made as fast as possible to keep the costs low and not for consistent, predictable surface or to minimize contaminants.*



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