



Best Practices for Handling and Using Volatile Analytical Standards

This guide is appropriate for standards containing volatile compounds dissolved in solution, such as VOCs and residual solvent gases.

Ensuring the integrity of your volatile gas reference standards starts with having the proper tools and skillset for best practices in handling and use. Because these standards are very volatile and are more sensitive to temperature and agitation than nonvolatile standards, it is especially important to observe proper care and handling in constructing your calibration solutions. Here, we describe best practice recommendations for use of your volatile gas standards as well as a simplified workflow to ensure you are set up for success in beginning your analyses.

Recommended Tools:

- Gas-tight syringes
- Restek safe cracker (Included with every order of Restek reference standards)

General Best Practice Recommendations



Avoid vigorous mixing and agitation.



Do not heat.



Work efficiently to minimize analyte loss.

Simplified Example Workflow

1	Store unopened ampuls at the recommended storage conditions until ready for use. Proper storage of volatile standards is especially critical to ensure the integrity of the analytes in solution.
2	Use the analytical reference standard cold (0 °C or colder). Do not heat the ampul to accelerate equilibration, as it can lead to volatilization of the compounds.
3	Prior to opening the ampul, gather your diluent, glassware, and any other supplies that are needed to prepare your calibration solutions. Once the ampul is open, it's important to work quickly in transferring and diluting your standards. Having supplies ready to go can help to ensure an efficient workflow.
4	Gently invert the unopened ampul several times to mix the contents prior to opening. It's important to ensure the contents of the ampul are homogenous prior to use, but agitation increases the surface area of the liquid and thus the volatile rate. We recommend gently inverting the ampul to minimize any volatilization of the analytes and then allowing the ampul to sit undisturbed for a couple of minutes before opening.
5	Carefully open the ampul with the Restek safe cracker.
6	Transfer and dilute standards as quickly as possible without compromising technique. We suggest using gas-tight syringes for transfer, which minimizes any potential volatilization.
7	After dilution, immediately place caps securely on the vials. Gently invert several times to mix.

Note: To maintain long-term stability, store in micro-vials with Mininert Precision sampling valves at 0 °C or colder to minimize analyte loss. Refer to our “Storing and Handling Volatile Residual Solvent Gases in Secondary Containers” article to learn more.

