



Handling Instructions for ADA Distillation Flask

This section contains glassware used on ADA's - Automatic Distillation Analyzers - instruments used to automatically conduct the distillation of liquid samples for determination of boiling range and recovery rate characteristics according to ASTM 086 and other methods. The following pages illustrate various RAMIN' brand products, made to our own specifications, which may be used with the major brands of ADA's indicated.

First, there are some things you should know about practicing safety and minimizing problems encountered with breakage and excessive usage. Carefully note the process calls for heating a volatile sample in a glass flask.

How to Minimize Danger

Carefully inspect each flask before using: Never use a flask that has a star or line crack, is deformed or the inside bottom shows heavy residue burned into the glass.

For best results and longevity, a polarized light should be used to detect invisible (bright white) strains in the bottom of the flask.

These strains may be removed by first cleaning the residue as best possible with solvent followed by annealing in a kiln at 565° C for 20 minutes.

i RAMIN' can provide polarized lights and annealing kilns.

Where do strains come from?

Automatic analyzers are programmed to increase heat as necessary to achieve certain distillation rates as measured in the condensate receiver. On higher boiling range samples, heat applied to the flask bottoms sometimes exceeds the strain point (513° C) and softening point (827° C) of borosilicate glass. Upon cooling, the flask develops a thermal strain at one or several points. These strains are only visible

under polarized light, . When next the flask is heated, the glass typically will develop a crack at the strain point, and perhaps break, spilling fuel directly on the red hot heater.

So, what can be done if I keep getting strains? First, check condition of the heater, plate, and hardware to be sure that there is nothing to cause the flask to be too close to the heater at some point. If an annealing process is not practical, then use standard borosilicate flasks for lower boiling samples, and switch to Quartz flasks for higher boiling samples (see Ramin' listings for Quartz Flasks). Quartz is 8 -10 times more expensive than borosilicate, so do the math. Use 4-5 Quartz flasks instead of 40-50 borosilicate, and gain the safety of Quartz which cannot be damaged by the heater.

i If just the side arm of a Quartz flask is broken, send batches of 10 or more to us for fusing on new side arms.

After each use, clean residue from inside of flask. With frequent use, residues from each distillation will burn into the glass, ultimately destroying the its integrity. Be careful not to scratch inside bottom with hard cleaning instruments.

i To increase flask life, dissolve residues by first soaking in solvents, prior to washing.

Lubricate the junctions between the centering stopper, flask, and probe: Mechanical breakage often occurs with stuck stoppers or probes, and can be reduced by a simple application of high temperature silicone grease film at appropriate points. This also applies to glass receivers and metal bases.

A Final Note

We at RAMIN' are the originators and pioneers of manufacturing distillation flasks by hand-blowing the glass to achieve uniform wall thickness – optimized to be thick enough to resist deformation, yet thin enough to resist formation of thermal strain. We have been battling the flask usage problems for over a decade. We cannot change ASTM protocol, but noting the inadequacy of typical machine-made distilling flasks, we have invested much time and effort in developing superior manufacturing methods, ensuring our flasks are the very best available, and most resistant to failure.

! We are here to help - call us!

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