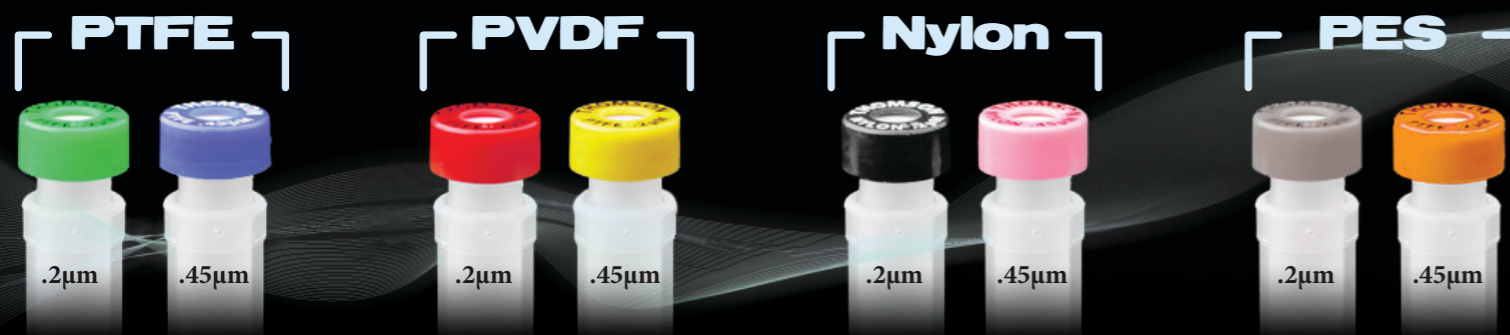




Part Number: 35544-500-ML
Description: Filter Vial w/ Low Evaporation Orange Cap *Patented* 500/Case

Other membranes available- see them at htslabs.com



Filter Vial Patent No. 7,790,117
& **iChemExplorer™**

UHPLC
COMPATIBLE

Thomson Instrument Company is not affiliated with Agilent® or its Agilent® 1100 or 1200, or with Reaction Analytics Inc.® or their product the iChemExplorer™.

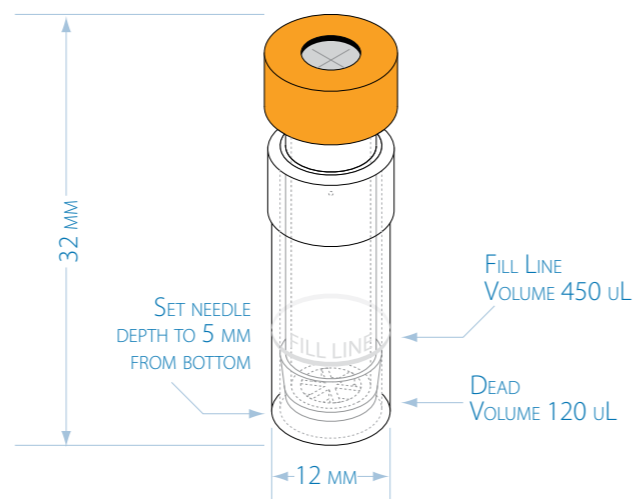
THOMSON
INSTRUMENT COMPANY

Solubility Study:

Comparison of Thomson Instrument Filter Vial with iChemExplorer™ to Traditional Shake and Filter Method

Introduction: Solubility Study with a “Friable” Compound

A study was performed on the solubility of a compound known to be difficult to determine. The compound was chosen as it breaks down into particles - friable - forming a slurry before dissolving into solution. This slurry presents the risk that particles may be drawn into the sample that could contaminate the HPLC through the sample run.



Experimental Set Up

The Thomson Instrument filter vial is a patented design that incorporates the filter medium into an insert that slides into the vial housing. Particulates are kept in the housing as the solution passes through the filter to be sampled from the insert.

The iChemExplorer™ heats and stirs the vials as the Agilent HPLC draws and analyzes samples over time. The iChemExplorer™ software acquires the chromatographic data and calculates the solubility curve for the compound.



Sample Preparation

The study evaluated solubility of the compound in ethanol (very soluble), acetonitrile (partially soluble) and water (nearly insoluble). With the shake and filter method, a large reservoir of solution (+250 milliliters) was prepared for each solvent to be studied. The flasks were immersed in a temperature-controlled water bath. The chemist drew and filtered samples from each flask over a twenty four hour period and recorded temperature with each draw with analysis done off-line. Set up, sampling and analysis took over a week and required more than 10 grams of starting material.

With the Thomson Instrument Filter Vial, 25 mg of starting material with 0.8 ml of solvent was added to the housing for each of the three solvents studied. Magnetic stir bars were added to the housing and the insert to aid diffusion across the filter medium. The inserts were fitted to the housings and the vials were placed in the temperature-controlled ICEtray. The HPLC autosampler sampled each vial every hour for twenty two hours and the samples were analyzed immediately. The solubility study with three solvents was complete in a day using less than 100 milligrams of starting material.



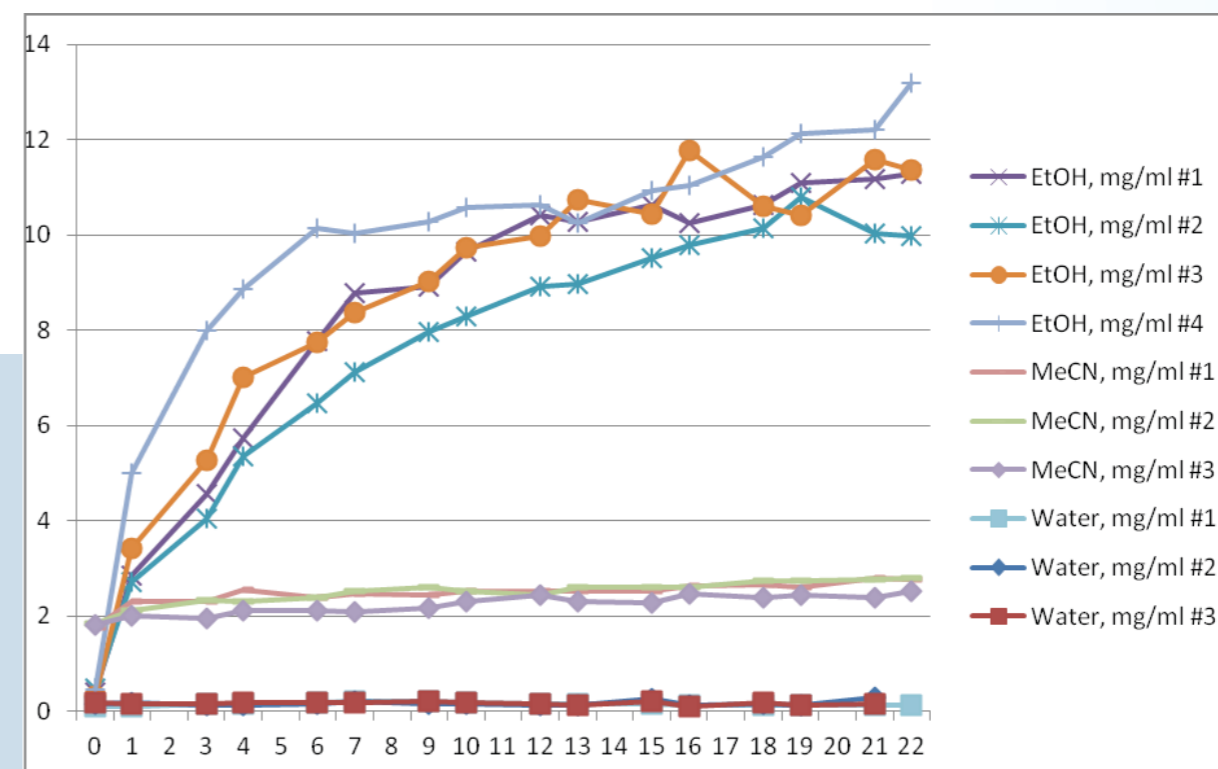
Pictures of Filter Vials in iChemExplorer™ ICEtray

Results, mg/ml

Solvent	Shake / Filter after 24hrs	Thomson Trial, 2µ
Ethanol	12.6	11.45
MeCN	1.9	2.70
Water	0.1	0.12

Observations

Great news. The values for equilibrium concentration for each solvent with the iChemExplorer™ are consistent with the traditional shake and filter method. This with the ease and automation of sample preparation make a strong case for the Filter Vial with the iChemExplorer™ to automate chemical studies.



Conclusions

- The graph of Peak Profiles – lines that follow peak area from sample to sample – drawn by iChemExplorer™ from the analytical data shows how the compound dissolved in three different solvents.
- The equilibrium concentration for each solvent as obtained by the iChemExplorer™ with the Filter Vial from Thomson Instrument is consistent with the traditional shake and filter method
- The filtrate in the Filter Vial insert appeared to be clear in all cases.
- The rate at which equilibrium was achieved with the Filter Vial is consistent with the traditional shake and filter method. This shows that filter media with stir bars show adequate diffusion for the samples to represent the chemistry across the vial.
- The consistency of the data shows that samples were free of particulates. The Peak Profiles are free of spikes that would indicate that the system had been contaminated.
- An automated method for testing solubility with the Thomson Instrument Filter Vial and the iChemExplorer™ is now available.
- The method could be extended to test the compound for solubility and chemical stability in the same sample run.
- The iChemExplorer™ software made it easy to generate reports in Windows-compatible applications as well as to export the results in Microsoft Excel. No more cutting out graphs to glue in a notebook. Now all the results were available in one place.