

EVALUATION THE EFFECTIVENESS OF VISION ELUENT CAPS IN REGARD TO PREVENTING THE SOLVENT VAPOURS FROM ENTERING INTO THE LABORATORY ENVIRONMENT



In this study we have investigated Vision Eluent Caps preventing volatile organic solvents evaporation from the eluent bottles.

The test was carried out in an HPLC laboratory at BUDAPEST UNIVERSITY OF TECHNOLOGY AND ECONOMICS.

We have measured the weight loss of methanol (CAS#67-56-1) (Merck Kft., Budapest) within a specified period of time (1 week) with three different apparatus:

App. 1. Simax 1l GL45 glass with PP pouring ring and its original closure with PTFE septa

App. 2. Simax 1l GL45 glass with PP pouring ring and Vision Safety Cap including a Shut-off valve (VLV-SF1)

App. 3. Simax 1l GL45 glass original closure with PP pouring ring and two 1/8" (3,2mm) hole drilled into it

All three apparatus were filled with 200ml of methanol and were stored at the same place on top of an HPLC system touching each other. During our test the temperature was between 21°C and 27°C and the humidity was (RH) 42%.

Results:

After the specified time (1 week) we have remeasured the weight of the three different configurations.

The measured weights were the following:

$m_{App.1.}(\text{start}) = 737,0\text{g}$

$m_{App.1.}(1 \text{ week}) = 737,1\text{g}$

$m_{App.2.}(\text{start}) = 773,2\text{g}$

$m_{App.2.}(1 \text{ week}) = 773,2\text{g}$

$m_{App.3.}(\text{start}) = 739,3\text{g}$

$m_{App.3.}(1 \text{ week}) = 733,8\text{g}$

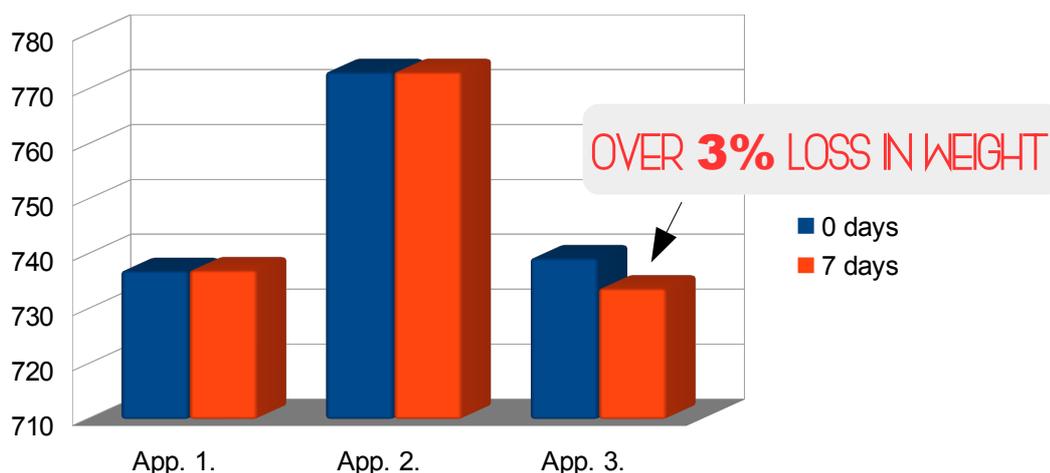


Fig. A: Weight change after one week

Conclusion:

There were 5,5g loss in weight only at apparatus 3. which is 3,47% of the weight of the methanol (Fig. A). We have not measured any weight loss at apparatus 1. and 2.

We were able to clarify from the results that solvent storage vessels equipped with Vision Eluent Safety Caps are preventing solvent emission which may enter into the air of the laboratory, potentially be a health risk for the laboratory workers and also a factor to alter chromatography results.