

HYDRODYNAMIC RESISTOR



What the hydrodynamic resistor is and what is it for

Quality of a chromatographic record is often adversely affected by an insufficient degassing of a mobile phase. The mobile phase flowing to the measuring cell through a capillary of ID = 0.2 mm is injected to a measuring volume of the cell of a diameter of about 1 mm. Due to a large change in the cross-section and a speed of liquid, the cell behaves similarly as a vacuum pump. Thus an underpressure is formed in the measuring volume of the cell resulting in release of microscopic gas bubbles, which depending on a viscosity of liquid and an amount of gas released of the mobile phase either quit or cumulate in in the cell. The bubbles entail in an increase of both baseline noise and drift, and often entirely depreciate the chromatographic analysis. This is evident in particular with a HPLC 02 cell with a very small outlet resistance, and unless no other equipment is connected to this cell, the device is very susceptible to forming bubbles.

This adverse feature may be entirely eliminated with a hydrodynamic resistor connected to an outlet capillary of the cell. The resistance increases pressure in the measuring volume of the cell and thus prevents from releasing gas bubbles in this volume.

The hydrodynamic resistor consists of several coils of a stainless steel capillary of ID = 0.2 mm with fitting permitting the connection to the cell. The capillary length was determined experimentally so that pressure in the cell eliminates gas release in a common range of analyses while not endangering the cell.

When the hydrodynamic resistor is to be connected

The effectivity of the hydrodynamic resistor is high and, therefore, we recommend it to be connected permanently even if the mobile phase is continuously degassed. You will found soon for yuorselves that you can use even the mobile phase you degassed a few days ago.

Note

How to find out that there are gas bubbles in the cell, when they are often so small they cannot be seen even after the cell is taken out of the unit? It will be enough for you to plug the outlet capillary of the cell with your finger. Unless you work at an extreme sensitivity, this procedure should not result in a marked shift of the baseline. On the contrary, the baseline will shift if there are bubbles in the cell as a result of plugging even if you work at a small sensitivity.

In case of any problems with degassing mobile phases or any other problems, do not hesitate to contact our specialists. They are ready to share their experience with you and to assist you in shooting your troubles.