

Sample Filtration Automation by HT4000E

Sample filtration is highly recommended in HPLC analysis in order to achieve the best analytical results. **In this context, HTA offers a solution to automate the sample filtration just before sample injection in LC/LC-MS systems.**



Samples are the main source of particle contamination in HPLC columns. Therefore, usually the **last preparation step before sample injection into the HPLC system is** to remove small particulates from the sample by **filtration**. Elimination of solid materials represents a crucial phase, as those particles can interfere with the compound of interest and very easily clog up the separation column. This has an impact on the separation performance, i.e. back pressure, retention time, peak size and peak shape. In the worst case, the column is irreversibly blocked and has to be replaced. The replacement of the column is not the only issue. It is the downtime, additional costs, or the loss of precious samples that might be of even greater importance.

For these reasons, **sample filtration is highly recommended in HPLC analysis** in order to achieve the best analysis result in a time- and cost-saving way.

Varieties of filter devices are available in the market for sample filtration before HPLC analysis.

The **filter cartridge represents an interesting alternative to the more common syringe filter**, an alternative that is more suitable for automation. Filter cartridges bring all of the benefits of filtration to the standard SPE cartridge format, allowing the production of injection-ready filtrates in a few minutes.

Types of filter cartridges correspond to the respective

syringe filters in terms of membrane types and pore size, but the filter cartridges are more easily handled by automation devices.

HT4000E is able to successfully automate the process of sample filtration by filter cartridges.

The filtration automation is simply broken down by HT4000E in few steps:

- 1. Sample loading on the filter cartridge**
- 2. Recovery of the filtered sample in the collection vial**
- 3. Eventual further steps of sample derivatization**
- 4. Direct injection of the filtered sample into the HPLC system**

Sample filtration is performed online and carried out just before the sample injection. Online filtration, executed at a fixed time before the injection, is particularly important for clarifying highly particle-laden samples, which have the potential to re-form particulates quickly.

HT4000E can handle filter cartridges by different manufacturers. PTFE reusable and autoclavable plungers are inserted into the filter cartridges to allow for the direct and accurate dispensation of samples onto the surface of the filter.



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