Positive Charge on Nylon Membranes - HPLC Primer

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Overview

Nylon membranes are widely used in HPLC sample preparation due to their mechanical strength, broad chemical compatibility, and fast flow rates.

However, one characteristic that must be carefully considered is the inherent positive surface charge found on all nylon membranes—an attribute that can significantly influence analytical results, especially when working with charged analytes.

Understanding the Positive Charge on Nylon Membranes

All nylon membranes possess a naturally occurring positive surface charge, though the magnitude varies widely among manufacturers. This charge arises from the polymeric structure of nylon and can lead to undesired interactions with negatively charged analytes.

Potential Problems Caused by High-Charge Nylon Membranes

If the membrane has a strong positive charge, it may contribute to:

- Adsorption of negatively charged analytes
- Lower analyte recovery due to charge-based interaction
- Distorted quantitation and inaccurate results
- Poor reproducibility across injections
- Systematic bias, especially in dissolution or trace-level analysis

These issues violate good laboratory practice by altering the chemical profile of the sample before it reaches the HPLC system.

Advantages of AQ™ Nylon Syringe Filters

MICROSOLV's AQ™ brand nylon syringe filters are engineered with low-charge nylon membranes, reducing unwanted analyte-membrane interactions and ensuring greater analytical reliability.

Benefits of Low-Charge Membrane Design

- Minimized electrostatic adsorption of anions
- Improved quantitation accuracy
- Higher reproducibility, especially across sequential sample injections
- Reduced risk of analyte loss during filtration
- More reliable dissolution testing outcomes

This low-charge design makes AQ™ nylon filters particularly suitable for sensitive analytical applications where membrane interactions must be minimized.

Best Practice Reminder

⚠️ **A syringe filter should remove particulates only.**
If the membrane charge or chemistry alters the analyte profile—by adsorption, retention, or chemical interaction—your filtration step is compromising data integrity.

For critical assays, especially those involving charged species, the membrane's surface charge must be considered during method development.

Ordering Information

👉 Click **HERE** for ordering information and images of AQ™ nylon syringe filters.

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