MICROSOLV

Clean Sparging Stones and Inline SS Filters - How To

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Overview

Proper cleaning and maintenance of stainless steel sparging stones and inline metal filters is essential for keeping gas-dispersion systems, HPLC setups, and process lines running efficiently. Because these porous metal components can trap residues, particulates, and chemically reactive compounds, they require cleaning methods that preserve pore integrity without damaging the metal structure or attached hardware.

This guide explains a proven cleaning workflow using phosphoric acid, DI water, and methanol, along with special considerations for applications such as wine production and solvents with unique compatibility requirements.

General Cleaning Method for Stainless Steel Sparging Stones

Stainless steel sparging stones—sometimes referred to as stainless steel filters—can be effectively cleaned using ultrasonication in 30% phosphoric acid. This process helps dissolve mineral buildup, remove contaminants, and restore the porosity required for efficient gas flow.

After the acid treatment, the stones should be thoroughly rinsed and cleaned using DI water (also with ultrasonication), followed by methanol to condition and dry the pores. This sequence ensures the component returns to optimal performance without introducing moisture that could interfere with later use.

Important Compatibility Warning

Only the metal components should undergo this cleaning procedure.

> Do not expose PEEK rings, polymer connectors, housings, or other non-metal parts to phosphoric acid or aggressive solvents. These materials can swell, degrade, or lose mechanical integrity.
>
> If your assembly combines metal with polymer components, remove the metal filter or sparging stone before cleaning.

Step-By-Step Cleaning Procedure

> **Step 1 – Phosphoric Acid Cleaning**
>
> Immerse the stainless steel element in 30% phosphoric acid and apply ultrasonication. This breaks down stubborn deposits, mineral content, and residues that accumulate during sparging or filtration.

Step 2 – Acid Removal with DI Water

Transfer the stone to DI water and ultrasonicate again to fully flush out remaining acid.
This step is essential to avoid acid carryover into solvents or mobile phases.

Step 3 – Methanol Conditioning

Rinse and ultrasonicate the stone in methanol.
Methanol conditions the metal surface, removes residual moisture, and prepares the stone for use with both hydrophilic and hydrophobic solvents.

If you know the exact solvent you'll be using with the sparging stone, you may condition the stone with that solvent instead. However, always verify solvent miscibility with water if you are transitioning directly from the DI water rinse.

Additional Considerations for Specific Applications

Handling Stones for the Wine Industry

For customers working with wine, residues such as tartrates can create significant buildup.
A 1 M NaOH rinse can effectively dissolve tartrate deposits.

After NaOH treatment, flush the sparging stone thoroughly with large volumes of DI water, followed optionally by methanol, to ensure no alkaline residues remain.

Handling Precautions

Always use powder-free gloves when handling sparging stones.
Gloves with powder can introduce particulates into the pores, undoing the cleaning work and compromising performance.

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