Whatman AQUEOUS IFD Disposable Filter Device

Product Information sheet

Introduction

Important

Read these instructions carefully before using the products.

Intended use

The products are intended for research use only, and shall not be used in any clinical or *in vitro* procedures for diagnostic purposes.

Description

The AQUEOUS IFD disposable filter device was designed to provide filtration of aqueous based HPLC mobile phases. The AQUEOUS IFD (Aqueous In-Line Filter/Degasser) is designed and built with a polypropylene housing and nylon filter medium. A housing security ring seals the circumference. Ferrule nut assemblies are included with each package.

The AQUEOUS IFD works on the "bubble point" principle. A "bubble point" is the pressure at which gasses will pass through a wet membrane. If pressure is maintained below the bubble point, the gas will not pass through the filter. The AQUEOUS IFD traps the gas and keeps it from passing through the filter media.

The AQUEOUS IFD is designed to work with aqueous mobile phases. Whatman™ recommends the SOLVENT IFD Product code 6725-5002A for solvent based mobile phases with a minimum 30% organic solvent.

This document provides general information on the AQUEOUS IFD. The specifications in *Technical Data: AQUEOUS IFD Disposable Filter Devices, on page 2* are intended to provide the basis for establishing functional use, as well as setting quality assurance test performance specifications.

- In-line Filtration and Degassing of Aqueous Based HPLC Mobile Phases
- Polypropylene Housing
- Nylon Membrane
- Ferrule Nuts Included
- Rugged Construction
- Air Vent on Inlet with Luer Lock Cap
- Lightweight - won't cause collapsed tubing
- Integrity Testable BP

AQUEOUS IFD - 50 mm Filters

Table 1.

Product code	Product Name	Pore Size (µm)	Media	Qty./Pkg.
6726-5002A	AQUEOUS IFD	0.2	Nylon	10

Operating Instructions

Safety

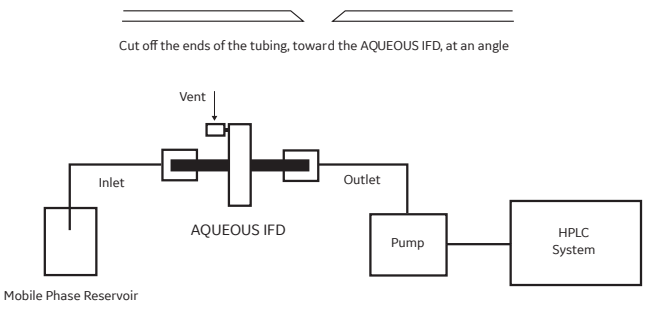
Considering the special factors of your application consult *Table 3, on page 3* to determine the correctness of use. Do not exceed the pressure, temperature or chemical compatibility recommendations.

CAUTION
High pressures are easily obtained when using syringes. Care should be taken not to exceed the recommended pressures. Hold the filter to the syringe when pressure is applied to prevent disengaging the filter from the syringe. This could occur if excessive pressure is applied.

Filter Media Considerations

The 0.2 µm nylon membrane filter media provides an excellent means of filtering aqueous based HPLC mobile phases. It provides high flow rates and throughput. For specific solutions see *Chemical Compatibility Summary, on page 3* Summary. "Wetted" media will not allow gas to easily pass through the media. The pressure required for gas to pass through wetted media (bubble point) is dependent on the media's pore size. Air entrained on the upstream side of wetted media blocks the flow path and reduces or stops flow.

Filter Installation and Priming



Step	Action
1	Establish continuous, bubble free flow from mobile phase reservoir to pump by aspirating with a syringe through the pump bleed valve.

Step	Action
2	Cut, at an angle, an appropriate length of 1/8" O.D. tubing to reach comfortably from the mobile phase reservoir to the inlet of the AQUEOUS IFD. Slide a ferrule nut over the cut tubing. Connect the tubing to the inlet of the AQUEOUS IFD, angled end towards the AQUEOUS IFD, by tightening the nut firmly. ***Note:*** *There are protective stops on both sides of the AQUEOUS IFD to prevent the tubing from damaging the filter media.*
3	Plug the inlet tubing, or seal the end by attaching and clamping off a short length of flexible tubing.
4	Fill a 10 ml syringe with the mobile phase, remove vent cap and secure the syringe to the vent.
5	With the outlet pointed up SLOWLY push the syringe plunger completely wetting out the filter media and filling the AQUEOUS IFD housing.
6	Connect outlet to 1/8" O.D. pump inlet tubing (cut at an angle) with a ferrule nut, as in step 2.
7	Uplug or unclamp AQUEOUS IFD inlet inlet tubing and place it in the mobile phase reservoir.
8	Making sure the vent is on the upper side of the AQUEOUS IFD, fill the tubing leading to the mobile phase reservoir by pushing slowly on the syringe plunger.
9	Slowly pull on the syringe plunger to withdraw a few ml of the mobile phase into the syringe. Note: This should remove any remaining entrapped air from the inlet side of the AQUEOUS IFD housing.
10	Maintaining the AQUEOUS IFD at the same level as the mobile phase in the reservoir, remove the syringe and replace the vent cap on the vent.
11	Pump mobile phase through system, bypassing the column, for 15 minutes to purge any remaining entrapped air in the tubing between the AQUEOUS IFD and the pump.

Troubleshooting

- **To check the AQUEOUS IFD connections for air tightness**: plug the tubing at the mobile phase reservoir. Remove vent cap and secure an empty syringe to the vent. Pull back on the plunger. If there are any air leaks, air bubbles will be observed.
- **Air present in the inlet side of the AQUEOUS IFD during operation**: The air may be evacuated by holding the AQUEOUS IFD level with the mobile phase in the mobile phase reservoir, removing the vent cap, securing an empty syringe to the vent and pulling back on the syringe plunger. Then remove the syringe and replace with the vent cap. Normally a small bubble of air will remain in the vent. This will not interfere with mobile phase flow.
- **Trouble with priming**: Follow steps 7 through 10 exactly under *Filter Installation and Priming*. Check for mobile phase leaks and/or air leaks (bubbles), step 1 of Trouble Shooting.
- **No flow immediately after Installation**:
  - Check for air blocking the inlet side of the AQUEOUS IFD by repeating step 7 through step 10 under *Filter Installation and Priming*.
  - To determine if the mobile phase is flowing from the mobile phase reservoir to the inlet side of the AQUEOUS IFD; secure a syringe filled with mobile phase to the vent and push the syringe plunger. Mobile phase should flow back from the AQUEOUS IFD to the mobile phase reservoir with a small amount of pressure on the syringe plunger.
  - To determine if the mobile phase is flowing through the AQUEOUS IFD to the pump; plug the tubing to the mobile phase reservoir, secure a syringe filled with mobile phase to the vent and push the syringe plunger. Mobile phase should flow easily through the AQUEOUS IFD and the tubing to the pump.
- **Slow or no flow after use**: Check for air blockage and clear any entrapped air by following step 7 through step 10 under *Filter Installation and Priming*. If problem persists, the AQUEOUS IFD is probably clogged with particulates and should be replaced.
- **Air appears to be passing through the AQUEOUS IFD**: Check for air leaks by following Trouble Shooting step 1. If no air leaks are observed on the outlet side, replace the AQUEOUS IFD, the media may have ruptured.

Operating considerations

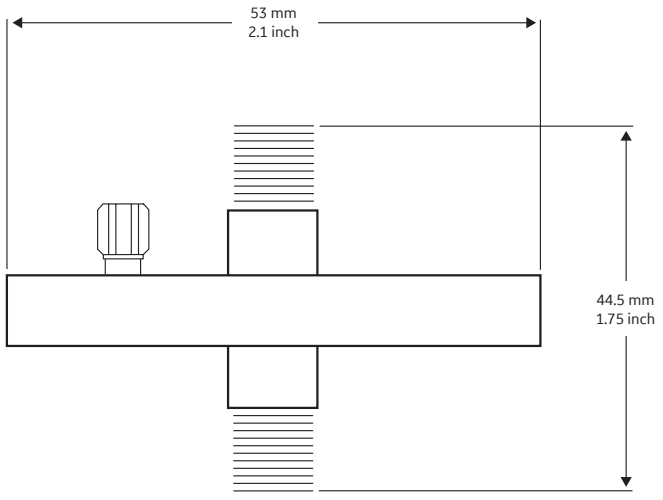
Proper operation of the system requires flow rates of < 2.5 mL/min. The filter unit should be changed:

1. weekly
2. after filtering 4 litres of mobile phase
3. or when changing from one mobile phase to another.

Integrity Testing: Bubble Point (BP) Test

Flush filter with 10 mL or more of an appropriate solution. After the media is completely wet, with outlet pointed upward, apply air under controlled pressure to the inlet until air breaks through the media and bubbles from the outlet. The pressure where air begins to pass though the media is the BP.

Technical Data: AQUEOUS IFD Disposable Filter Devices



Connections 5/16-24 Threads
Ferrule Nuts for 1/8" O.D. Tubing
are included with each Package

Table 2.

Product code	Pore Size Microns	INTEGRITY TEST DATA[1] WATER Bubble Point Bar	Psi	WATER FLOW RATE[1] mL/min at 1 bar (14.5 psi)
6726-5002A	0.2	2.9	42	90

[1] Typical values

Table 3.

Dimensions:	53 mm (2.1 in.) × 44.5 mm (1.75 in)
Weight:	11.5 grams (20 gms with ferrule nuts)
Filtration Area:	16 cm^2
Maximum Pressure	
Housing Burst:	4.1 bar (60 psi)
Operating	2.1 bar (30 psi)
Housing:	Polypropylene
Vent:	On Inlet with Luer Lock Cap
Volume "Hold Up":	Full housing 1.0 mL with Air Purge < 0.1 mL
Filter Media:	Nylon
Flow Direction:	Flow should enter from the inlet
Operating Flow Rate:	< 2.5 mL/min
Connectors:	5/16-24 Threads + 1/8" O.D. Ferrule nuts

Chemical Compatibility Summary

Table 4.

Solvent	NYL
Acetic Acid 5% +	R
Acetic Acid, Glacial	LR
Acetone	R
Acetonitrile	R
Ammonia, 6N	R
Amyl Acetate	R
Amyl Alcohol	R
Benzene [1]	LR
Benzyl Alcohol [1]	LR
Boric Acid	LR
Butyl Alcohol	R
Butyl Chloride [1]	NR
Carbon Tetrachloride [1]	LR
Chloroform [1]	NR
Chlorobenzene	NR
Citric Acid	LR
Cresol [1]	NR
Cyclohexanone	NR
Cyclohexane	NR
Diethyl Acetamide	R
Dimethyl Formamide	R
Dioxane	R
DMSO	R
Ethanol	R
Ethers [1]	R
Ethyl Acetate	R
Ethylene Glycol	R
Formaldehyde [1]	R
Freon TF [1]	NR
Formic Acid	NR
Hexane	R
Hydrochloric Acid (Conc) [1]	NR
Hydrofluoric Acid [1]	NR
Isobutyl Alcohol	R
Isopropyl Alcohol	R
Methanol	R
Methyl Ethyl Ketone	R
Methylene Chloride [1]	NR
Nitric Acid (Conc)	NR
Nitric Acid, 6N [1]	NR
Nitrobenzene [1]	LR
Pentane*	R
Perchloro Ethylene [1]	LR
Phenol 0.5%	NR
Pyridine	LR
Sodium Hydroxide, 6N	LR
Sulfuric Acid (Conc) [1]	NR
Tetrahydrofuran [1]	R
Toluene [1]	LR
Trichloroethane [1]	LR
Trichloroethylene [1]	NR
Water	R
Xylene [1]	LR

[1] Short Term Resistance of Housing

R = Resistant; LR = Limited Resistance; NR = Not Recommended;

The above data is to be used as a guide only. Testing prior to application is recommended.

This chemical compatibility chart is intended as a general guide only. This guide has been complied from results of in-house studies, material supplier studies and currently available technical literature. Because of solvent condition variabilities, which may exist lab to lab, component compatibility cannot be guaranteed. In order to verify chemical compatibility, studies on individual chemicals of interest should be undertaken.

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