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**MILLIPORE**

AN DS TS PG SG

Data Sheet

## Millipore Contamination Analysis Kits



**Millipore  
Value**

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# Basic to Professional : “Millipore Value”

Millipore contamination analysis kit consists of assorted Millipore filtration products suited for contamination measurement and control. Millipore Test kit is recommended for ensuring conformance to cleanliness standards popularly known as the "Millipore Value". The kit includes the apparatus shown except standard equipment such as weighing scale, drying oven, microscope, Petri dish, membranes, grounding set, etc. Available in two versions: Basic kit and Professional kit



## Vacuum / Pressure Pump

This oil free pump is a portable AC powered source of vacuum to 585mm/ 23” Hg (at mean sea level) or pressure to 4 bar/ 58 psig for filtration of liquids or gases or other continuous or intermittent use with all types of filter holders.



Air flow rates at different vacuum and pressure settings are given behind (for vacuum operation, pump exit pressure is 1 atmosphere).

The motor is permanently lubricated, and is protected by a thermal overload switch with automatic reset.

## Hydrosol SST Filter Holder



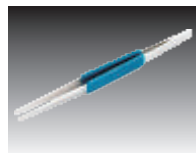
Vacuum filtering liquids for analysis of particulate or biological contamination analysis via vacuum filtration. Funnel, base and support screen are made of SS, anodized locking ring, Teflon gaskets, grounding set and silicon stopper.

## Vacuum Filtering Flask

Used for vacuum filtration with Millipore filter holders. Side arm connects to vacuum source with vacuum hose. Also used as water trap to prevent liquid/ mist entering the pump.



## Filter Forceps



Used to handle Millipore Membrane filters without damage using highly polished SS forceps blades with beveled, unserrated tips.

## Vacuum Trap

During the vacuum filtration of liquids, to prevent liquids or mist entering the pump, Millipore recommends use of vacuum trap between vacuum pump and filter holder. This assembly consists of vacuum filtering flask, silicone stopper, glass tube and vacuum hose.



## Solvent Filtering Dispenser

Ultra clean and dispense small volumes of solvent/liquids by squeeze bottle action. Hand pressure operated dispenser with filter holder fitted with a delivery tube used to direct filter solvent/liquids against surfaces. Flask is made of borosilicate glass, neoprene bulb, stopper and SS filter holder with teflon gasket which is meant to accommodate 25mm Membrane filters.



## Dispensing Pressure Vessel



Dispensing Pressure Vessel holds liquid for filtration through Millipore pressure operated filter holders, if connected to an external pressure source. Body and fittings are made of 316 SS, Viton O-ring and base is moulded with Styrene butadiene rubber.

## Filterjet Solvent Dispenser

Used to spray concentrated jet of ultra clean solvent or rinse solution on surfaces for cleaning. SST filter holder with support screen is meant to accommodate 25 mm membrane filters.



## PetriSlides



Holds filter securely in place. Transparent cover allows microscopic examination without removal. Rectangular base has rounded corners for mounting on microscope stage. Recommended for storage.

Optional

## PROCEDURE

1. All containers and their parts used in testing to be thoroughly cleaned and dried before usage (filter holder assembly, containers, petridish, pans, forceps).
2. Remove 5 $\mu$  membrane with the help of forceps, handling by edge only, and place in a Petri dish.
3. Dry membrane at 80 $\pm$ 2°C for 15 minutes and cool in a desiccator to room temp. (nearly 10 minutes).
4. Remove 5 $\mu$  membrane with the help of forceps, handling by edge only, and place centrally on calibrated weighing scale pan.
5. Note down the weight of pre-dried membrane to  $\pm$  0.1 mg (W1).
6. Wash the components with a known volume of pre filtered solvent (V).
  - 6.1 While washing, direct the contaminants away from component and into the collecting pan.
  - 6.2 For components with L/D > 1, place horizontally and clean in 2 phases (at least).
  - 6.3 For large and hollow components clean active surfaces.
  - 6.4 Follow routines for different profiles.
7. Collect washed component's solvent into a clean beaker.
8. Wash component container with a known volume of pre filtered solvent and transfer into beaker (as per step 7) (repeat once).
9. Using clean forceps, place weighed dry membrane centrally in the filter holder assembly and lock the ring in place.
10. Pour stirred solvent as in step 7 & 8 and start vacuum pump.
11. As liquid level drops down, clean the SS filter holder wetted internals with about 25 ml of pre-cleaned solvent to remove any adhering contaminations on SS filter holder assembly.
12. After filtering these solvents continue vacuum pump for 10 seconds.
13. Gently remove locking ring, hold contaminated membrane with clean forceps, handling by edge only, and place in a petri dish.
14. Dry membrane for 15 minutes and cool in a desiccator for 2 minutes.
15. Place the contaminated membrane with the help of clean forceps, handling by edge only, and place centrally on the pan of calibrated weighing scale.
16. Note down the contaminated membrane to 0.1mg (W2).
17. Observe nature of contaminants and record under following heads.
  - Abrasive (like steel chips, sand, steel bristles, CI, Al, etc.)
  - Non Abrasive (like paint, fibers, fiber, bristles, cotton waste, etc.)

## CALCULATIONS

Gravimetric Contamination in part (C) in mg / sq. m

$$C = \frac{W2 - W1}{A}$$

Where W2=Mass of loader 5 $\mu$  membrane (mg)  
W1=Mass of clean & dry 5 $\mu$  membrane (mg)

## REPEATABILITY TEST

Recheck on already checked component (one in ten)

$$\text{If } \frac{\text{'C' Value}}{\text{Original 'C' Value}} > 0.10$$

Increase the duration of washing of the parts at washing stage. (ref. step 6 in 10% increments and refreeze the volume V).

## IMPORTANCE OF CRITICAL PARTICLE SIZE

- ✎ part drawing specifies critical particulate size, Subject loaded membrane to Microscopy (with X 40 microscope).
- Note total number of particles on the entire membrane, >specified critical size and record the nature of contaminant as in step 17
- For size, use longest dimension as the measure. Also record the largest observed particle's dimension

## Specifications

Description	Cat. No	Qty	Kit reference	
			Basic Kit	Professional Kit
			Cat. No. X171 047 BS	Cat. No. X171 047 PS
Vacuum /Pressure Pump, 220V / 50 Hz.	XI55 220 50	01	✓	✓
Hydrosol SST Filter Holder, 47 mm	XI20 047 20	01	✓	✓
Vacuum Filtering Flask	XI10 047 05	01	✓	✓
Filter Forceps SS	XI62 000 06	01	✓	✓
Vacuum Trap	XI10 VTR AP	01	✓	✓
Filterjet Solvent Dispenser	XI67 025 00	01	•	✓
Dispensing Pressure Vessel, 5L	XI67 OOP 05	01	•	✓
Solvent Filtering Dispenser	XI66 025 00	01	✓	✓
Vacuum Hose silicone	XI71 000 04	01	✓	✓
Membranes	-	-	As per requirement	

Note: Typical micron ratings used are 0.45, 0.8, 1.2, 5, 8 and 10 microns. Ground connections recommended for inflammable solvents (not included). Filter jet Solvent Dispenser

## Chemical Compatibility Chart

	Filters-Discs							Fabricated Devices						Cartridges						O-Rings					Holders/Housings					
	Hydrophobic Durapore	Durapore	MF-Millipore	Fluoropore	Mitex	Isopore	Millex (HA, GS, OR) Sterivex-GS	Millex-FG	Millex-SR, FH <sub>13</sub> , FH <sub>41</sub> , FG <sub>50</sub>	Millex-HV, HV <sub>13</sub> , HV <sub>4</sub>	Millex-GV/Sterivex-GV, HV	Sterifil-D (GV-HV)	Sterifil-D, Millicell-HA	Millipak	Lifegard	Polysep	Milligard TP	Millidisk	Durapore TP	Polygard	Teflon	Viton-A	Buna-N	Silicone	EPR	Swinnex, In-Line 47	Sterifil	1225 Manifold	Stainless Steel	PL Housing
Carbon tetrachloride	R	R	R	L	R	L	N	N	R/L	R	R	N	N	N	N	N	N	R	R	R	R	R	N	N	N	R	N	N	R	N
Gasoline	R	R	R	R	R	R	N	N	R	R	L	N	N	R	R	R	R	R	R	L	R	R	R	N	N	R	N	R	R	N
Isobutyl alcohol	R	R	R	R	R	R	R	R	R	R	R	R	R	R	N	N	N	R	R	R	R	R	N	R	R	R	R	R	R	R
Kerosene	R	R	R	R	R	R	R	R	R	R	R	N	N	R	N	R	N	R	R	L	R	R	R	N	N	R	R	R	R	L
Mineral Spirits	R	R	R	R	R	R	R	R	R	R	R	R	N	R	R	N	R	R	R	L	R	R	R	N	N	R	R	R	R	R
Petroleum ether	R	R	R	R	R	R	L	R	R	R	R	R	N	R	R	R	R	N	L	L	R	R	R	R	R	R	R	R	R	N
Phenol (5.0%)	R	R	R	R	R	-	R	R	R	R	R	R	R	R	R	N	N	R	R	R	R	R	R	R	R	R	R	R	R	R

**Code:** R = Recommended  
N = Not recommended

R/L = Limited use for HPLC only; discard first ml or rinse 1-2 mls of primary solvent  
L = Limited applications; testing prior to use is recommended

### Standards

- ARP 598** : Procedure for the determination of particulate contamination of hydraulic fluids by the particulate count method
- ARP 1953** : Acceptance test procedures and standards to ensure clean fuel system components
- ARP 785** : Aerospace - Procedure for the determination of particulate contamination in hydraulic fluids by the control filter gravimetric procedure
- ARP 4252** : Instrumental methods of determining surface cleanliness 2002-01-0078: Metal quality - the effects on die casters and end users



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