



Chemical Compatibility Chart

Chemical compatibility charts are essential references for determining the suitability of various filter materials for use in filtration applications involving different chemical solutions. These charts provide a guide for selecting the most appropriate filter material based on its resistance to chemical attack, swelling, and degradation. Using a chemical compatibility chart, you can ensure that the filter materials are compatible with the specific chemicals present in the filtration process, which can help prevent contamination and ensure the integrity of the filtration system.

Appendix A of this chemical compatibility chart will describe the most commonly used filter materials in filtration applications. These materials include PES (polyether sulfone), PTFE (polytetrafluoroethylene), PP (polypropylene), PVDF (polyvinylidene fluoride), and NYL (nylon).

Chemical	PES	PTFE	PP	PVDF	Nylon
Acetic Acid (Glacial) Acid, Organic	Excellent	Excellent	Excellent	Excellent	Not Recommended
Acetone Ketone	Not Recommended	Excellent	Excellent	Not Recommended	Excellent
Acetonitrile (ACN) Nitrile	Not Recommended	Excellent	Not Recommended	Limited	Excellent
Ammonium Hydroxide Caustic	Not Recommended	Excellent	Testing Required	Excellent	Testing Required
Ammonium Sulfate (Saturated) Salt, Aqueous Solution	Testing Required	Excellent	Excellent	Not Recommended	Excellent
Amyl Acetate Ester	Excellent	Excellent	Testing Required	Excellent	Testing Required
Amyl Alcohol	Excellent	Excellent	Excellent	Excellent	Testing Required
Benzene HC, Aromatic	Not Recommended	Excellent	Not Recommended	Excellent	Excellent
Benzyl Alcohol HC Aromatic/Alcohol	Testing Required	Excellent	Excellent	Excellent	Testing Required

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Chemical	PES	PTFE	PP	PVDF	Nylon
Boric Acid (Aqueous Solution)	Excellent	Excellent	Excellent	Testing Required	Excellent
Butyl Acetate Ester	Not Recommended	Excellent	Testing Required	Testing Required	Excellent
Butyl Alcohol	Excellent	Excellent	Excellent	Excellent	Excellent
Carbon Tetrachloride HC, Halogenated	Not Recommended	Excellent	Testing Required	Excellent	Testing Required
Cellosolve (Ethyl) Glycol Ether	Excellent	Excellent	Excellent	Testing Required	Excellent
CHAPS (Aqueous Solution) Surfactant / Detergent	Testing Required	Testing Required	Testing Required	Testing Required	Testing Required
Chloroform HC, Halogenated	Not Recommended	Excellent	Testing Required	Excellent	Not Recommended
Cyclohexanone Ketone	Not Recommended	Excellent	Excellent	Not Recommended	Excellent
Diethyl Pyrocarbonate, 0.2% Carboxylic Anhydride	Testing Required	Testing Required	Testing Required	Testing Required	Testing Required
Dimethyl Sulfoxide (DMSO), Sulfoxide	Not Recommended	Excellent	Excellent	Not Recommended	Excellent
Dimethylformamide Amide	Testing Required	Excellent	Excellent	Not Recommended	Excellent
Dioxane Ether	Testing Required	Not Recommended	Excellent	Excellent	Excellent
Ethers Ether	Testing Required	Testing Required	Not Recommended	Excellent	Excellent
Ethyl Acetate Ester	Not Recommended	Testing Required	Testing Required	Excellent	Excellent

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Chemical	PES	PTFE	PP	PVDF	Nylon
Ethyl Alcohol	Excellent	Excellent	Excellent	Excellent	Testing Required
Ethylene Glycol	Excellent	Excellent	Excellent	Excellent	Excellent
Formaldehyde Aldehyde	Testing Required	Excellent	Excellent	Excellent	Excellent
Formic Acid, 50% Acid, Organic	Testing Required	Excellent	Excellent	Excellent	Not Recommended
Freon® (TF Or PCA) HC, Halogenated	Testing Required	Excellent	Excellent	Excellent	Excellent
Gasoline HC	Excellent	Excellent	Not Recommended	Excellent	Excellent
Glycerine (Glycerol) Glycol	Excellent	Excellent	Excellent	Excellent	Excellent
Helium Gas	Testing Required	Excellent	Excellent	Testing Required	Excellent
Hexane HC, Aliphatic	Excellent	Excellent	Not Recommended	Excellent	Excellent
Hydrochloric Acid, 1 N (HCL) Acid, Inorganic	Excellent	Excellent	Excellent	Excellent	Excellent
Hydrochloric Acid, 6 N (HCL) Acid, Inorganic	Excellent	Excellent	Testing Required	Testing Required	Testing Required
Hydrochloric Acid, Conc. (HCL) Acid, Inorganic	Testing Required	Excellent	Not Recommended	Not Recommended	Not Recommended
Hydrofluoric Acid, Inorganic	Not Recommended	Excellent	Not Recommended	Not Recommended	Not Recommended
Hydrogen Gas	Testing Required	Excellent	Excellent	Excellent	Excellent
Hydrogen Peroxide, 3% Peroxide	Testing Required	Excellent	Excellent	Excellent	Excellent
Hydrogen Peroxide, 30% Peroxide	Testing Required	Excellent	Testing Required	Excellent	Testing Required

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Chemical	PES	PTFE	PP	PVDF	Nylon
Hydrogen Peroxide, 90% Peroxide	Testing Required	Excellent	Excellent	Excellent	Not Recommended
HYPO (Aqueous Solution) Salt, Aqueous Solution	Testing Required	Excellent	Excellent	Excellent	Excellent
Isobutyl Alcohol	Excellent	Excellent	Excellent	Excellent	Testing Required
Isopropyl Acetate Ester	Not Recommended	Excellent	Testing Required	Excellent	Excellent
Isopropyl Alcohol	Excellent	Excellent	Excellent	Excellent	Testing Required
Kerosene HC	Excellent	Limited	Testing Required	Excellent	Excellent
Lactic Acid, 50% Acid, Organic/Alcohol	Testing Required	Excellent	Excellent	Testing Required	Testing Required
Methyl Ethyl Ketone (MEK) Ketone	Not Recommended	Excellent	Excellent	Not Recommended	Excellent
Methyl Acetate Ester	Not Recommended	Excellent	Testing Required	Not Recommended	Excellent
Methyl Alcohol	Excellent	Excellent	Excellent	Excellent	Testing Required
Methylene Chloride HC, Halogenated	Not Recommended	Excellent	Not Recommended	Not Recommended	Testing Required
Methyl Isobutyl Ketone	Not Recommended	Excellent	Not Recommended	Not Recommended	Excellent
Mineral Spirits HC	Excellent	Excellent	Not Recommended	Excellent	Excellent
Nitric Acid, 6 N Acid, Inorganic	Excellent	Excellent	Testing Required	Excellent	Not Recommended
Nitric Acid (Concentrated) Acid, Inorganic	Testing Required	Testing Required	Not Recommended	Not Recommended	Not Recommended
Nitrobenzene HC, Aromatic	Testing Required	Excellent	Not Recommended	Excellent	Excellent
Nitrogen Gas	Testing Required	Excellent	Testing Required	Excellent	Excellent

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Chemical	PES	PTFE	PP	PVDF	Nylon
Ozone Gas	Testing Required	Excellent	Not Recommended	Excellent	Not Recommended
Paraldehyde Aldehyde	Testing Required	Excellent	Testing Required	Testing Required	Excellent
Pentane HC, Aliphatic	Excellent	Excellent	Not Recommended	Excellent	Excellent
Petroleum Ether	Testing Required	Excellent	Not Recommended	Excellent	Excellent
Phenol (Aqueous Solution) Phenol	Testing Required	Excellent	Not Recommended	Excellent	Not Recommended
Potassium Hydroxide, 3 N Caustic	Testing Required	Excellent	Excellent	Excellent	Excellent
Pyridine Amine	Not Recommended	Excellent	Excellent	Not Recommended	Testing Required
Silicone Oils	Testing Required	Excellent	Excellent	Excellent	Excellent
Sodium Carbonate (Aqueous Solution) Salt, Aqueous Solution	Testing Required	Excellent	Excellent	Excellent	Testing Required
Water (Brine) Salt, Aqueous Solution	Testing Required	Excellent	Excellent	Excellent	Excellent
Sodium Chloride (Aqueous Solution) Salt, Aqueous Solution	Testing Required	Excellent	Excellent	Excellent	Excellent
Sodium Hydroxide, 3 N Caustic	Excellent	Excellent	Excellent	Excellent	Excellent

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Chemical	PES	PTFE	PP	PVDF	Nylon
Sodium Hydroxide (Concentrate) Caustic	Excellent	Excellent	Excellent	Excellent	Not Recommended
Sulfuric Acid (Concentrated) Acid, Inorganic	Not Recommended	Excellent	Not Recommended	Testing Required	Not Recommended
Tetrahydrofuran (THF) Ether	Testing Required	Excellent	Not Recommended	Not Recommended	Excellent
Toluene HC, Aromatic	Excellent	Excellent	Not Recommended	Excellent	Excellent
TCA (Aqueous Solution) Acid, Organic	Testing Required	Excellent	Excellent	Excellent	Testing Required
Trichloroethylene HC, Halogenated	Not Recommended	Excellent	Not Recommended	Testing Required	Testing Required
Urea, 8 M Salt, Aqueous Solution	Testing Required	Excellent	Excellent	Excellent	Excellent
Xylene HC, Aromatic	Testing Required	Excellent	Not Recommended	Excellent	Excellent

Please note that these compatibility recommendations may vary depending on the specific formulation or concentration of the chemical being used. It's always important to consult the manufacturer's recommendations.

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Appendix A

PES (Hydrophilic) Membrane is a versatile filter media that is widely used in the pharmaceutical and biotech industries due to its excellent flow rates and retention capabilities. This membrane is hydrophilic, meaning it has a strong affinity for water and other polar solvents. This makes PES ideal for applications where the filtration of aqueous solutions is required, such as sterile filtration of culture media, buffers, and vaccines.

PTFE (Hydrophobic) Membrane is a highly resistant filter media that repels water and other polar solvents. This membrane is ideal for applications where oils, ketones & organic solvents, or gases are required, such as viscous oil base solutions, filtration of aggressive solvents, compressed air, or venting of tanks.

PES and PTFE membranes are available in a 0.2um sterilizing grade, commonly used in sterile compounding applications. These filters are designed to quantitatively retain bacteria, such as *Brevundimonas diminuta* (ATCC #19146), at a minimum challenge level of 10^7 CFU per cm^2 of filtration area, consistent with ASTM F838-05. This ensures that the filtered product is free from bacterial contamination and meets the highest safety and quality standards.

Polypropylene (PP) is a widely used filter material due to its low cost, high chemical resistance, and excellent mechanical properties. It is compatible with a wide range of acids, bases, and solvents, including hydrochloric acid, sulfuric acid, sodium hydroxide, acetone, and methanol. However, it is not recommended for use with strong oxidizing agents, such as nitric acid and hydrogen peroxide, as they can cause the degradation of the polymer.

Polyvinylidene fluoride (PVDF) is a high-performance filter material that offers excellent chemical resistance and thermal stability. It is compatible with a wide range of acids, bases, and solvents, including hydrochloric acid, sulfuric acid, sodium hydroxide, acetone, and ethanol. It is also resistant to most organic solvents, including chlorinated solvents and aromatic hydrocarbons. However, PVDF is not recommended for use with strong oxidizing agents, such as nitric acid and hydrogen peroxide.

Nylon is a versatile filter material widely used to filtrate aqueous and organic solvents. Nylon can endure higher temperatures and is compatible with a wide range of chemicals, including most acids, bases, and solvents. However, it is not recommended for use with strong oxidizing agents, such as nitric acid and hydrogen peroxide, as they can cause the degradation of the polymer.

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