



GFP Seal (black)

GFP seals are supplied by default in ECOM pumps (UHMW-PE seals on customers request). The GFP material (Graphite Fiber-Reinforced Polytetrafluorethylene) is Teflon (PTFE) with a filler added to it for the purpose of increasing resistance to cold flow and improving wear characteristics. It is absolutely inert to any HPLC solvent, but it does not have the high resistance to wear and cold-flow that the UHMW-PE compounds have. It is more flexible than UHMW-PE, and therefore it conforms better to pistons that are either not aligned well or have been worn flat. The color of our formulation is black. There are dozens of Teflon compounds, many of which are black, but they are not all the same. Some offer an extremely low coefficient of friction but wear rapidly, while others last longer but can rapidly wear a sapphire piston (such as ceramic-filled Teflon). Recommended for temperatures from $-320\text{ }^{\circ}\text{F}$ to $+500\text{ }^{\circ}\text{F}$ ($-196\text{ }^{\circ}\text{C}$ to $+260\text{ }^{\circ}\text{C}$).



UHMW-PE Seal (yellow)

This material is based on an ultra-high molecular weight polyethylene, and it has been compounded with other proprietary polymers to provide better lubricity and solvent resistance than pure UHMW-PE. This material is a self-lubricating compound that exhibits excellent wear characteristics, a low coefficient of friction, and good resistance to cold-flow (extrusion). It is often used for „dry“ bearings and seals, where lubrication by oil or other fluids is not permitted. It is resistant to most HPLC solvents, except for methylene chloride (dichloromethane) and toluene. UHMW-PE seals should only be used intermittently when using these solvents in 100 % concentration. The UHMW-PE material offers excellent seal performance in temperatures from $-450\text{ }^{\circ}\text{F}$ to $180\text{ }^{\circ}\text{F}$ ($-268\text{ }^{\circ}\text{C}$ to $82\text{ }^{\circ}\text{C}$). UHMW-PE seals are supplied in ECOM devices on customers request.

Solvent Compatibility

GFP and UHMW-PE Seals

Solvent	GFP	UHMW-PE	Solvent	GFP	UHMW-PE
Acetamide	G	R	Ethyl Acetate	R	N
Acetone	R	N	Ethyl Ether	R	N
Acetonitrile	G	R	Ethylene Diamine	G	R
Acrylonitrile	G	R	Ethylene Glycol	R	N
Aqueous/Aqueous Buffered	G	R	Heptane	R	G
Benzene	R	N	Hexane	R	N
Butanol	G	R	Iso-octane	R	N
Carbon Tetrachloride	R	N	Isopropyl Alcohol	G	R
Chloroform	R	N	Methanol	G	R
Cyclohexane	R	N	Methyl Ethyl Ketone	R	G
Cyclohexanone	R	N	Pentane	R	N
Dichloroethane	R	N	Pyridine	R	G
Dichloromethane	R	N	Tetrahydrofuran (THF)	R	N
Dimethyl Formamide (DMF)	N	R	Toluene	R	N
Dimethyl Sulfoxide	N	R	Xylene	R	G
Ethanol	R	G			

Legend: R = Recommended, G = Good (better choice may be available), N = Not Recommended (material degradation probable)



PTFE Seal (white)

Our assortment also includes seals from virgin PTFE material. In ECOM pumps, they are used as auxiliary seals in washing heads. Unlike the two types of seals mentioned above, this material does not come into contact with any of the pumped liquid. Therefore, we do not provide chemical compatibility information for this material.