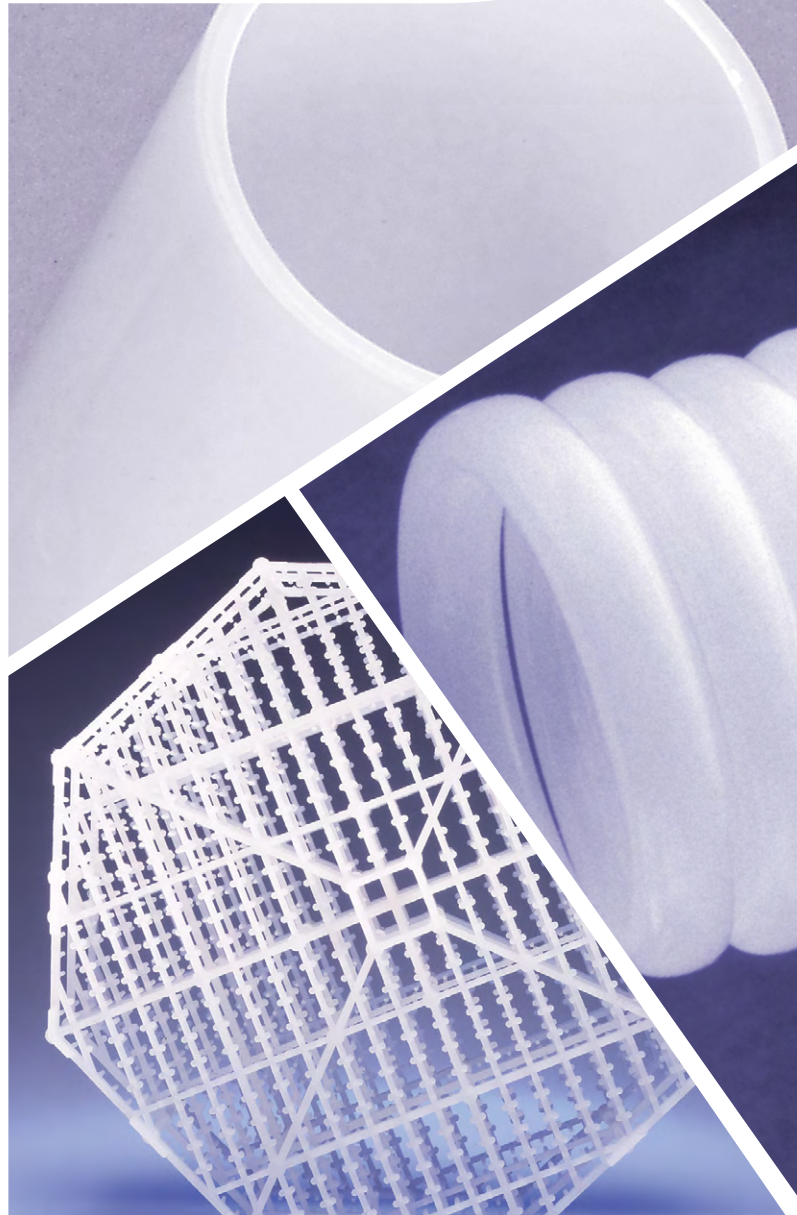
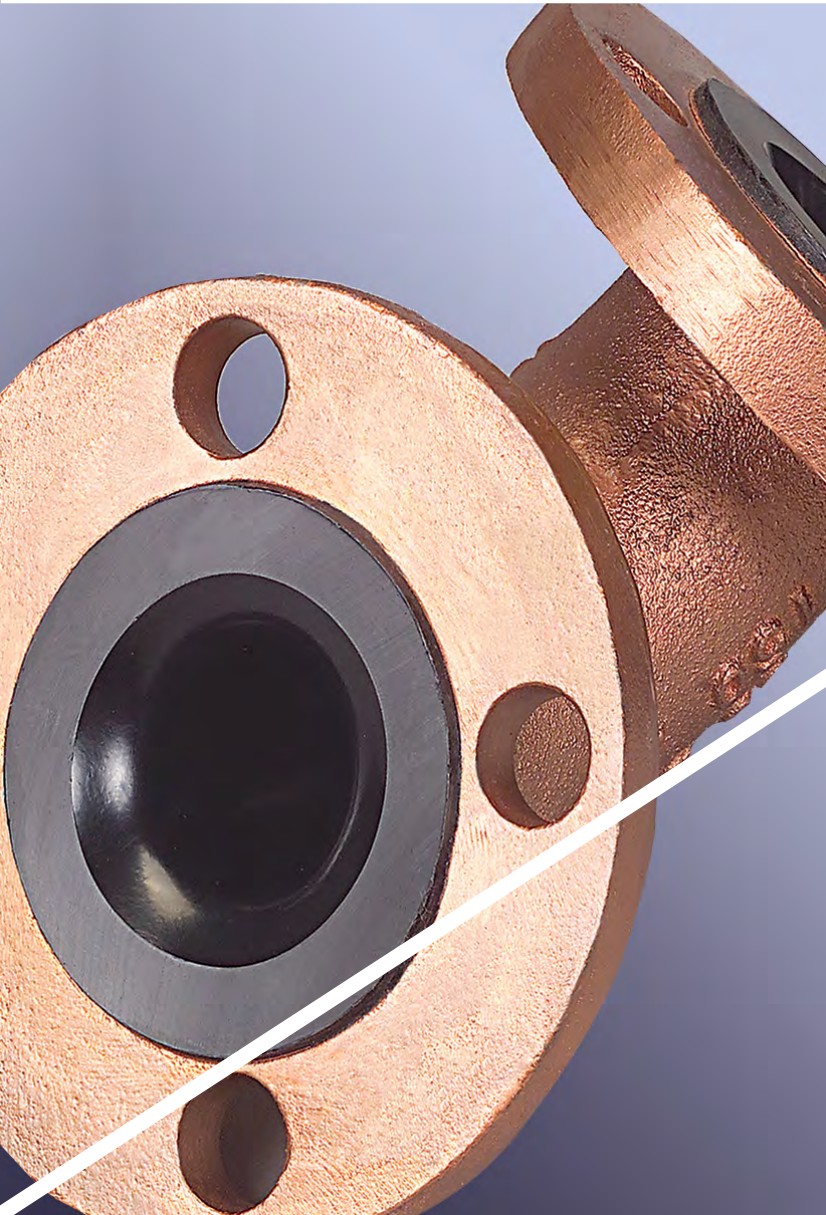


KYNAR[®]
BY ARKEMA

POLYVINYLIDENE FLUORIDE

Kynar[®] Components



Kynar® PVDF — Excellent Performance for Tough Chemical Service

Kynar® PVDF Your investment in a Kynar® PVDF fluid handling system is an investment in the **SAFETY, RELIABILITY** and **LONGEVITY** of your process.

just got stronger...

Introducing Glass filled Kynar® PVDF

The Kynar® business & technical team speaks almost every day with process engineers, maintenance personnel and facility managers – people just like you. When discussing plastics, your most common concerns relate to the chemical resistance, high temperature performance, abrasion resistance, and physical strength of plastics. To be sure, most plastics can only handle non-corrosive chemicals at low temperatures.

But Kynar® PVDF is not “most plastics.” You may be surprised to discover that you can use Kynar® polyvinylidene fluoride (PVDF) high performance plastic in many of the applications you once thought were limited to specialty metal alloys or stainless steel.

Why you should consider components made from Kynar® PVDF instead of stainless steel or exotic metal alloys:

- While metals rust and rouge with age, Kynar® components do not corrode and do not need to be passivated
- Kynar® components are strong, tough and provide long-lasting, corrosion-free service
- Kynar® systems have installed costs comparable to stainless steel—without the maintenance costs
- Kynar® components are lighter weight and more abrasion resistant than stainless steel and are easily assembled with heat welding

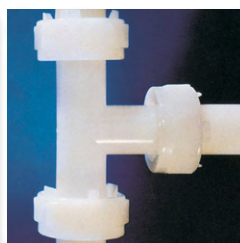
Why you should consider components made from Kynar® PVDF instead of PVC, polypropylene or CPVC:

- Kynar® systems can operate at a much higher temperature – up to 149°C (300°F) in some chemical environments
- Kynar® components are more resistant to radiation and to a broader range of chemicals
- Kynar® PVDF contains no additives and is suitable for use in high purity applications
- Kynar® components exhibit excellent flame and smoke characteristics
- Kynar® systems exhibit greater mechanical strength
- A wide range of Kynar® components are available due to its ease of processing



Common Kynar® Applications:

Application	Instead of:	Up to:	For:
exposure to chlorinated & brominated chemicals	titanium alloy 20 PTFE-lined steel PFA-lined steel	275°F (135°C)	lower cost easier installation lower permeation
exposure to hot acids (eg: HF, HCl, H ₂ SO ₄ , HNO ₃ , chromic, HBr)	titanium alloy 20 PTFE-lined steel	275°F (135°C)	lower cost easier installation chemical resistance to varied concentrations
alcohol + acids/chlorides/hydrocarbons	polypropylene HDPE	194°F (90°C)	broad chemical resistance to varied concentrations
high pressure + high temperature	PVC polypropylene CPVC	285°F (141°C) and 230 psi at RT	high temperature rigidity high pressure rating broad chemical resistance



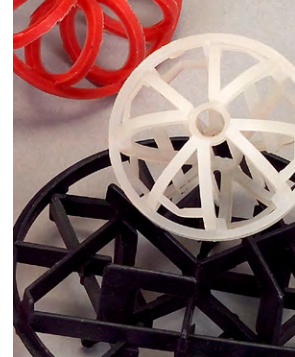
Common Chemicals Handled by Kynar® Components:

acetic acid (<60%)
acid mixtures
biodiesel
bromine
bromine water
bromobenzene
brominated salts
chlorinated salts

chlorine
chlorine dioxide
chlorobenzene
chromic acid
deionized (DI) water
fuel mixtures
hot sugars
hydrobromic acid

hydrochloric acid
hydrofluoric acid
iodine
metallic chlorides
methyl alcohol
methyl chloroform
nitric acid
ozone

peracetic acid
phosphoric acid
plating chemistries
salicylic acid
salt water
sodium hypochlorite
sulfuric acid (<98%)



For more detailed information about the chemical resistance of Kynar® components, including corresponding operating temperatures, please visit the Literature section of www.kynar.com and download our Kynar® Chemical Resistance Chart.

Vessels¹

Type	Description	Temperature ²	Pressure ¹	Available Sizes	Polymer Layer Thickness
sheet-lined steel	fabric-backed Kynar® or Kynar Flex® sheet is applied to all fluid contact surfaces and welded in place to form a continuous corrosion and purity barrier	up to 107°C (225°F)	up to the limit of the steel vessel	any size tank can be lined	1.5 mm - 5 mm (60 mil - 200 mil)
spray-coated steel	Kynar® or Kynar Flex® powder is applied to the metal surface in layers and baked to form a continuous layer	up to 93°C (200°F)	full vacuum up to the limit of the steel vessel	up to 2 m x 6 m (6.5' x 20')	0.64 mm - 6.3 mm (25 mil - 250 mil)
dual-laminate	Kynar® or Kynar Flex® sheet is formed into the shape of the container and wrapped with fiberglass reinforced plastic (FRP)	up to 125°C (257°F)	up to 1.03 MPa (150 psi)	up to 6 m x 30.5 m (20' x 100')	1.5 mm - 5 mm (60 mil - 200 mil)
solid	solid Kynar® or Kynar Flex® vessels are either injection-molded (generally small sizes), welded or rotomolded	up to 140°C (284°F)	typically atmospheric	any size can be fabricated	3 mm - 101 mm (1/4" - 4")

Pipe, Valves & Fittings¹

Type	Description	Temperature ²	Pressure ¹	Available Diameters	Joining Methods
solid	uncovered extruded, machined or injection-molded Kynar® or Kynar Flex® components, DWV and pressure systems available	up to 150°C (302°F)	full vacuum up to 6.9 MPa (1,000 psi)	20 - 400 mm (1/2" - 16")	butt fusion, socket fusion, mechanical, threaded, flanged, IR, smooth inner bore, bead & crevice free, electrofusion
FRP-wrapped	extruded or machined Kynar® or Kynar Flex® components, covered with a thick layer of fiberglass reinforced plastic	up to 140°C (284°F)	full vacuum up to 1.03 MPa (150 psi)	almost any size can be fabricated	butt fusion, flanged
lined steel	extruded Kynar Flex® lining surrounded by carbon steel or stainless steel	up to 135°C (275°F)	full vacuum up to 3.28 MPa (475 psi)	25 - 250 mm (1" - 10")	welded, flanged
RTP Pipe	Extruded Liner, Reinforced Layer and Extruded Jacket	up to 140°C	Up to 34 MPa or (5,000 psi)	25.4 mm to 152.4 mm (1"-10")	Mechanically swaged metal fitting to provide compression to the reinforcement layer

Solid Kynar® valves and Kynar®-lined steel valves are available in many forms, such as ball, diaphragm, butterfly, ball check, relief, check and plug valves.

Tubes & Fittings¹

Type	Temperature ²	Pressure ¹	Available Diameters
flexible tubing	up to 107°C (225°F)	vacuum rating up to 2.07 MPa (300 psi)	1.6 - 152.4 mm (1/16" - 6")
rigid tubing	up to 121°C (250°F)	vacuum rating up to 1.59 MPa (230 psi)	3.2 - 324 mm (1/8" - 12 - 3/4")

Tubes are joined by compression or push-in fittings and are available in the following forms, among others:

- threaded adaptors, barbed elbows & nipples
- reduction couplers
- leak-proof couplers, elbows, tees, Y's and threaded plugs

1- Note that the Kynar® component temperature, pressure and sizing data above are compiled from industry data and are for illustrative purposes only. The actual temperature and pressure ratings of your system, as well as its resistance to chemical attack, are dependent on many environmental factors. Higher operating temperatures will reduce the Kynar® system's maximum operating pressure; higher operating pressures will reduce the system's maximum operating temperature. Higher operating pressures or temperatures may also require increased component wall thickness. Consult your Kynar® component supplier about your system's operating parameters before purchasing a Kynar® system.

2- Kynar® components can withstand continuous temperatures as low as -30°C (-22°F) under certain conditions. Please contact your Kynar® component supplier with specific information about your application to determine the lowest recommended operating temperature of your Kynar® system.

Kynar® components are also available in the following forms:

- pumps (centrifugal, sump, ball, diaphragm, chamber, magnetic drive and more)
- membranes
- nozzles and ozone injectors
- foams
- tower packings
- mist eliminators
- filter housings
- stock shapes (rod, sheet, film)
- conveyor belting

Kynar® natural resins meet the following standards:

- National Sanitary Foundation (NSF): NSF-61 Potable Water, NSF-51 Food Equipment, NSF-14 Plumbing System Components
- Food & Drug Administration (FDA): FDA 177.2510 & 177.2600 Repeated Contact with Meat or Poultry Food Products
- 3A Sanitary Standards Inc. (3-A SSI): Multiple Use Plastic Materials Used as Product Contact Surfaces for Dairy Equipment
- United States Pharmacopeia (USP): USP Class VI
- Chicago Rabbinical Council (CRC): Kosher Certified
- United States Department of Agriculture (USDA): Use in Process or Storage Areas to Contact Meat or Poultry Food Products
- ASTM E84 (NFA 255, UL 723): Surface Burning Characteristics of Building Materials
- Compliance with Halal requirements under Islamic law

For more information on Kynar® PVDF

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