

Kynar[®]
polyvinylidene fluoride

CHEMICAL RESISTANCE CHART



Chemical Substance	Concentration ^a	HOMOPOLYMER Maximum ^{b, d} Temperature		FLEX 2850 Maximum ^{b, d} Temperature		FLEX 2800 Maximum ^{b, d} Temperature	
		°F	°C	°F	°C	°F	°C
Acetaldehyde		NR	NR	NR	NR	NR ^c	NR
Acetamide		75	25	NR	NR	NR	NR
Acetic Acid		125	50	125	50	125	50
Acetic Acid	10% in water	220	105	230	110	200	95
Acetic Acid	50% in water	200	95	200	95	200	95
Acetic Acid	80% in water	150	65	125	50	125	50
Acetic Anhydride		NR	NR	NR	NR	NR	NR
Acetone		NR	NR	NR	NR	NR	NR
Acetone	10% in water	125	50	100	40	100	40
Acetonitrile		125	50	100	40	NR	NR
Acetophenone		NR	NR	NR	NR	NR	NR
Acetyl Bromide		125	50	125	50	125	50
Acetyl Chloride		125	50	125	50	125	50
Acetylacetone		NR	NR	NR	NR	NR	NR
Acetylene		250	120	170	75	150	65
Acrylonitrile		75	25	75	25	75	25
Adipic Acid		150	65	150	65	150	65
Air		285	140	275	135	260	125
Alcoholic Spirits	40% Ethyl Alcohol	200	95	200	95	200	95
Allyl Alcohol		125	50	125	50	125	50
Allyl Chloride		212	100	212	100	212	100
Aluminum Acetate	Aqueous solution or solid	285	140	275	135	230	110
Aluminum Bromide		285	140	275	135	230	110
Aluminum Chloride	Up to 40% in water	285	140	275	135	230	110
Aluminum Fluoride	Aqueous solution or solid	275	135	275	135	230	110
Aluminum Hydroxide		275	135	275	135	230	110
Aluminum Nitrate	Aqueous solution or solid	275	135	275	135	230	110
Aluminum Oxychloride		275	135	275	135	230	110
Aluminum Sulfate	Aqueous solution or solid	275	135	275	135	230	110
Ammonia, gas		NR	NR	NR	NR	NR	NR
Ammonia, Liquid		NR	NR	NR	NR	NR	NR
Ammonium Acetate	Aqueous solution or solid	175	80	150	65	150	65
Ammonium Alum	Aqueous solution or solid	275	135	275	135	230	110
Ammonium Bifluoride	Aqueous solution or solid	150	65	150	65	150	65
Ammonium Bromide	Aqueous solution or solid	250	120	230	110	230	110
Ammonium Carbonate	Aqueous solution or solid	275	135	275	135	230	110
Ammonium Chloride	Aqueous solution or solid	275	135	275	135	230	110
Ammonium Dichromate	Aqueous solution or solid	250	120	275	135	230	110
Ammonium Fluoride	Aqueous solution or solid	150	65	170	75	170	75
Ammonium Hydroxide	Up to "concentrated"	220	105	200	95	200	95
Ammonium Metaphosphate	Aqueous solution or solid	275	135	275	135	230	110
Ammonium Nitrate	Aqueous solution or solid	275	135	275	135	230	110
Ammonium Persulfate	Aqueous solution or solid	75	25	75	25	75	25
Ammonium Phosphate	Aqueous solution or solid	275	135	275	135	230	110
Ammonium Sulfate	Aqueous solution or solid	275	135	275	135	230	110
Ammonium Sulfide	Aqueous solution or solid	125	50	125	50	125	50
Ammonium Thiocyanate	Aqueous solution or solid	275	135	275	135	230	110
Amyl Acetate		125	50	100	40	100	40
Amyl Alcohol		275	135	275	135	230	110
sec-Amyl Alcohol		125	50	125	50	125	50
Amyl Chloride		285	140	275	135	230	110
Aniline		100	40	100	40	100	40
Aniline Hydrochloride	Aqueous solution or solid	75	25	75	25	75	25
Aqua Regia		75	25	75	25	75	25
Arsenic Acid	Aqueous solution	275	135	275	135	230	110
Asphalt		250	120	250	120	230	110
Barium Carbonate		285	140	275	135	230	110
Barium Chloride	Aqueous solution or solid	285	140	275	135	230	110
Barium Hydroxide		275	135	250	120	230	110
Barium Nitrate	Aqueous solution or solid	275	135	275	135	230	110
Barium Sulfate		285	140	275	135	230	110
Barium Sulfide		275	135	275	135	230	110

Maximum usage temperatures for KYNAR® resin with selected chemicals.

Consult your KYNAR® products representative if you have any questions or for more recent results.

- a** pure substance unless otherwise indicated.
- b** temperatures in °F have been rounded to °C in 5 degree increments.
- c** NR indicates that KYNAR® resin is not recommended for use with the chemical at room temperature or at the temperature indicated.
- d** the temperatures listed are maximum values and do not take into account pressures, vacuums, mixtures, or close tolerances.

KYNAR® is a registered trademark of **Arkema Inc.**

Chemical Substance	Concentration ^a	HOMOPOLYMER Maximum ^{b, d} Temperature		FLEX 2850 Maximum ^{b, d} Temperature		FLEX 2800 Maximum ^{b, d} Temperature	
		°F	°C	°F	°C	°F	°C
Beer		230	110	230	110	212	100
Beet Sugar Liquors		230	110	230	110	230	110
Benzaldehyde		70	20	NR	NR	NR	NR
Benzene		170	75	170	75	170	75
Benzenesulfonic Acid	Aqueous solution or solid	125	50	125	50	125	50
Benzoic Acid		230	110	230	110	220	105
Benzoyl Chloride		170	75	170	75	170	75
Benzoyl Peroxide		170	75	170	75	170	75
Benzyl Alcohol		250	120	250	120	230	110
Benzyl Chloride		285	140	275	135	230	110
Benzyl Ether		100	40	75	25	75	25
Benzylamine	Aqueous solution or liquid	75	25	NR	NR	NR	NR
Black Liquor		175	80	175	80	175	80
Bleaching Agents		275	135	275	135	230	110
Borax		275	135	275	135	230	110
Boric Acid		275	135	275	135	230	110
Boron Trifluoride		75	25	75	25	75	25
Brine		285	140	275	135	230	110
Brine, acid		270	130	275	135	230	110
Brine, basic		270	130	275	135	230	110
Brine, chlorinated acid		200	95	200	95	200	95
Bromic Acid	Aqueous solution	200	95	200	95	200	95
Bromine dry gas		150	65	125	50	125	50
Bromine, liquid		150	65	150	65	125	50
Bromine, water		212	100	200	95	200	95
Bromobenzene		150	65	150	65	150	65
Bromoform		150	65	150	65	150	65
m-Bromotoluene		175	80	175	80	150	65
Butadiene		250	120	250	120	230	110
Butane		250	120	250	120	230	110
Butanediol	Aqueous solution or liquid	275	135	250	120	230	110
Butyl Acetate		75	25	NR	NR	NR	NR
Butyl Acrylate		125	50	100	40	100	40
Butyl Alcohol	Aqueous solution or liquid	230	110	230	110	220	105
sec-Butyl Alcohol	Aqueous solution or liquid	200	95	200	95	200	95
t-Butyl Alcohol	Aqueous solution or liquid	200	95	200	95	200	95
Butyl Bromide		285	140	275	135	230	110
Butyl Chloride		285	140	275	135	230	110
Butyl Ether		100	40	NR	NR	NR	NR
Butyl Mercaptan		285	140	275	135	230	110
Butyl Stearate		100	40	100	40	100	40
Butylamine	Aqueous solution or liquid	NR	NR	NR	NR	NR	NR
sec-Butylamine	Aqueous solution or liquid	70	20	NR	NR	NR	NR
t-Butylamine	Aqueous solution or solid	70	20	NR	NR	NR	NR
1-Butylene		285	140	275	135	230	110
Butylphenol		220	105	250	120	230	110
Butyraldehyde		150	65	125	50	125	50
Butyric Acid		230	110	230	110	230	110
Calcium Acetate	Aqueous solution or solid	285	140	230	110	230	110
Calcium Bisulfate	Aqueous solution or solid	285	140	275	135	230	110
Calcium Bisulfite	Aqueous solution or solid	200	95	200	95	200	95
Calcium Bromide	Aqueous solution or solid	285	140	230	110	230	110
Calcium Carbonate		285	140	275	135	230	110
Calcium Chlorate	Aqueous solution or solid	285	140	275	135	230	110
Calcium Chloride	Aqueous solution or solid	285	140	230	110	230	110
Calcium Hydroxide		275	135	250	120	230	110
Calcium Hypochlorite	Aqueous solution or solid	200	95	200	95	200	95
Calcium Nitrate	Aqueous solution or solid	275	135	275	135	230	110
Calcium Oxide		250	120	230	110	230	110
Calcium Phosphate		285	140	275	135	230	110
Calcium Sulfate		285	140	275	135	230	110

NOTE: Grades of KYNAR® resin may vary in temperature rating at different pressures. Please consult **Arkema** for the recommendation of a KYNAR® grade for your specific application.

The listed ratings apply to solid KYNAR® resin components only. Coatings or laminates bonded to other substrates may have lower temperature ratings due to adhesive or primer capabilities in the system.

A special guide is available for short term or low pressure contact. This brochure called "KYNAR® Homopolymer Chemical Resistance for Waste Systems Guide", can be made available by contacting an Arkema technical representative.

KYNAR®
Polyvinylidene Fluoride

Chemical Substance	Concentration ^a	HOMOPOLYMER		FLEX 2850		FLEX 2800	
		Maximum ^{b, d} Temperature °F	°C	Maximum ^{b, d} Temperature °F	°C	Maximum ^{b, d} Temperature °F	°C
Cane Sugar Liquors		285	140	250	120	230	110
Caprylic Acid		175	80	175	80	175	80
Carbon Dioxide		285	140	250	120	230	110
Carbon Disulfide		75	25	75	25	75	25
Carbon Monoxide		285	140	275	135	230	110
Carbon Tetrachloride		275	135	230	110	230	110
Carbonic Acid		275	135	250	120	230	110
Casein		250	120	230	110	230	110
Castor Oil		285	140	275	135	230	110
Chloral Hydrate		75	25	75	25	75	25
Chlorinated Phenol		150	65	150	65	150	65
Chlorine	5% in CCl ₄	200	95	175	80	170	75
Chlorine, gas		200	95	175	80	170	75
Chlorine, liquid		200	95	175	80	175	80
Chlorine Dioxide		150	65	160	70	150	65
Chlorine Water		230	110	230	110	230	110
Chloroacetic Acid	Aqueous solution or pure	NR	NR	NR	NR	NR	NR
Chloroacetyl Chloride		125	50	125	50	125	50
Chlorobenzene		170	75	170	75	160	70
Chlorobenzene-sulfonic Acid	Aqueous solution or pure	200	95	200	95	200	95
Chlorobenzyl Chloride		125	50	125	50	125	50
Chloroform		125	50	125	50	125	50
6-Chlorohexanol		170	75	170	75	170	75
Chlorohydrin		125	50	125	50	125	50
Chloropicrin		150	65	150	65	150	65
Chlorosulfonic Acid		NR	NR	75	25	75	25
Chlortrimethylsilane		125	50	125	50	125	50
Chrome Alum	Aqueous solution or solid	200	95	200	95	200	95
Chromic Acid	Up to 40% in water	175	80	175	80	175	80
Chromic Acid	50% in water	125	50	150	65	150	65
Chromyl Chloride		125	50	125	50	125	50
Cider		230	110	230	110	212	100
Citric Acid	Aqueous solution or solid	275	135	250	120	230	110
Coal Gas		230	110	230	110	230	110
Coconut Oil		285	140	275	135	230	110
Copper Acetate	Aqueous solution or solid	250	120	250	120	230	110
Copper Carbonate, basic		285	140	275	135	230	110
Copper Chloride	Aqueous solution or solid	285	140	275	135	230	110
Copper Cyanide		275	135	250	120	230	110
Copper Fluoride		275	135	250	120	230	110
Copper Nitrate	Aqueous solution or solid	275	135	275	135	230	110
Copper Sulfate	Aqueous solution or solid	285	140	275	135	230	110
Corn Oil		285	140	275	135	230	110
Corn Syrup		250	120	250	120	230	110
Cottonseed Oil		285	140	275	135	230	110
Cresol		150	65	150	65	150	65
Cresylic Acid		150	65	150	65	150	65
Crotonaldehyde		125	50	100	40	100	40
Crude Oil		285	140	275	135	230	110
Cryolite		250	120	250	120	230	110
Cuprous Chloride		250	120	250	120	230	110
Cyclohexane		285	140	250	120	230	110
Cyclohexanol		150	65	150	65	150	65
Cyclohexanone		75	25	75	25	75	25
Cyclohexyl Acetate		200	95	200	95	200	95
Decane		250	120	275	135	230	110
Dextrin	Aqueous solution or solid	250	120	250	120	230	110
Diacetone Alcohol		75	25	NR	NR	NR	NR
p-Dibromobenzene		200	95	200	95	200	95
1,2,-Dibromopropane		200	95	200	95	200	95
Dibutyl Phthalate		NR	NR	NR	NR	NR	NR

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Chemical Substance	Concentration ^a	HOMOPOLYMER Maximum ^{b, d} Temperature		FLEX 2850 Maximum ^{b, d} Temperature		FLEX 2800 Maximum ^{b, d} Temperature	
		°F	°C	°F	°C	°F	°C
Dibutyl Sebacate		NR	NR	NR	NR	NR	NR
Dibutylamine	Aqueous solution or liquid	70	20	NR	NR	NR	NR
Dichloroacetic Acid	Aqueous solution or liquid	125	50	125	50	125	50
o-Dichlorobenzene		150	65	150	65	150	65
Dichlorodimethylsilane		125	50	125	50	125	50
Dichloroethylene		230	110	230	110	220	105
2,2-Dichloropropionic Acid		125	50	125	50	125	50
aa-Dichlorotoluene		150	65	150	65	150	65
Diesel Fuels		285	140	275	135	230	110
Diethanolamine	Aqueous solution or liquid	NR	NR	NR	NR	NR	NR
Diethylamine	Aqueous solution or liquid	75	25	NR	NR	NR	NR
Diethyl Malonate		NR	NR	NR	NR	NR	NR
Diethylenetriamine	Aqueous solution or liquid	125	50	100	40	100	40
Diglycolic Acid		75	25	75	25	75	25
Diisobutyl Ketone		125	50	75	25	75	25
Diisobutylene		285	140	275	135	230	110
Diisopropyl Ketone		70	20	NR	NR	NR	NR
Dimethyl Acetamide		NR	NR	NR	NR	NR	NR
Dimethyl Formamide		NR	NR	NR	NR	NR	NR
Dimethyl Phthalate		75	25	NR	NR	NR	NR
Dimethyl Sulfate		75	25	75	25	75	25
Dimethyl Sulfoxide		NR	NR	NR	NR	NR	NR
Dimethylamine	Aqueous solution or gas	75	25	NR	NR	NR	NR
Dimethylaniline		75	25	75	25	75	25
2,6,-Dimethyl-4-heptanol		200	95	200	95	200	95
2,5-Dimethyl-1,5-hexadiene		250	120	250	120	230	110
Diocetyl Phthalate		75	25	75	25	75	25
1,4,-Dioxane		NR	NR	NR	NR	NR	NR
Dioxolane		NR	NR	NR	NR	NR	NR
Dipropylene Glycol Methyl Ether		75	25	NR	NR	NR	NR
Disodium Phosphate	Aqueous solution or solid	200	95	200	95	200	95
Divinyl Benzene		125	50	125	50	125	50
Epichlorohydrin		100	40	NR	NR	NR	NR
Epsom Salts	Aqueous solution or solid	250	120	250	120	200	95
Ethanethiol		75	25	75	25	75	25
Ethanolamine	Aqueous solution or liquid	NR	NR	NR	NR	NR	NR
2-Ethoxyethyl Acetate	Aqueous solution or liquid	200	95	200	95	200	95
Ethyl Acetate		NR	NR	NR	NR	NR	NR
Ethyl Acetoacetate		75	25	75	25	75	25
Ethyl Acrylate		75	25	75	25	75	25
Ethyl Alcohol	Aqueous solution or liquid	285	140	230	110	212	100
Ethyl Chloride		285	140	250	120	230	110
Ethyl Chloroacetate		75	25	75	25	75	25
Ethyl Chloroformate		125	50	125	50	125	50
Ethyl Cyanoacetate		75	25	75	25	75	25
Ethyl Ether		125	50	100	40	100	40
Ethyl Formate		75	25	75	25	75	25
Ethylbenzene		125	50	125	50	125	50
Ethylene Chlorohydrin	Aqueous solution or liquid	75	25	75	25	75	25
Ethylene Dichloride		275	135	250	120	230	110
Ethylene Glycol	Aqueous solution or liquid	285	140	275	135	230	110
Ethylene Oxide		200	95	200	95	200	95
Ethylenediamine	Aqueous solution or liquid	220	105	150	65	125	50
2-Ethyl-1-hexanol		250	120	250	120	230	110
Fatty Acids		285	140	275	135	230	110
Fatty Acids, Sulfonates		175	80	175	80	175	80
Ferric Chloride	Aqueous solution or solid	285	140	275	135	230	110
Ferric Hydroxide		250	120	230	110	230	110
Ferric Nitrate	Aqueous solution or solid	275	135	275	135	230	110
Ferric Sulfate		285	140	275	135	230	110
Ferric Sulfide		250	120	250	120	230	110

**IN GENERAL KYNAR® RESIN
IS CHEMICALLY RESISTANT TO:**

- Most acids
- Salts
- Weak Bases
- Halogens
- Halogenated solvents
- Alcohols
- Fluids or gas streams in excess of 212° F (100° C)
- Nuclear and UV radiation
- Oxidants

In general KYNAR® Flex resin has improved chemical resistance to strong acids and strong bases.

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KYNAR®
Polyvinylidene Fluoride

Chemical Substance	Concentration ^a	HOMOPOLYMER Maximum ^{b, d} Temperature		FLEX 2850 Maximum ^{b, d} Temperature		FLEX 2800 Maximum ^{b, d} Temperature	
		°F	°C	°F	°C	°F	°C
Ferrous Chloride	Aqueous solution or solid	285	140	275	135	230	110
Ferrous Hydroxide		250	120	250	120	230	110
Ferrous Nitrate	Aqueous solution or solid	275	135	275	135	230	110
Ferrous Sulfate		285	140	275	135	230	110
Fluorine		75	25	75	25	75	25
Fluoroboric Acid	Aqueous solution	275	135	250	120	230	110
Fluorosilic Acid		275	135	250	120	230	110
Formaldehyde	37% in water	125	50	125	50	125	50
Formic Acid	Aqueous solution or liquid	250	120	250	120	230	110
Fructose	Aqueous solution or solid	285	140	275	135	230	110
Fruit Juices, Pulp		230	110	230	110	230	110
Fuel Blend Diesel/Biodiesel		140	60	140	60	140	60
Fuel C		140	60	140	60	140	60
Fuel CE 10		140	60	140	60	140	60
Fuel CM15		140	60	140	60	140	60
Fuel E85		140	60	140	60	140	60
Fuel Oil		285	140	275	135	230	110
Fuel Rapeseed Oil Biodiesel 100%		140	60	140	60	140	60
Fumaric Acid		170	75	150	65	150	65
Furan		NR	NR	NR	NR	NR	NR
Furfural		75	25	75	25	75	25
Furfuryl Alcohol	Aqueous solution or liquid	100	40	100	40	100	40
Gallic Acid		75	25	75	25	75	25
Gas, manufactured		285	140	275	135	230	110
Gas, natural		285	140	275	135	230	110
Gasoline, leaded		285	140	275	135	230	110
Gasoline, sour		285	140	275	135	230	110
Gasoline, unleaded		285	140	275	135	230	110
Gelatin		250	120	250	120	230	110
Gin		212	100	212	100	212	100
Glucose	Aqueous solution or solid	285	140	275	135	230	100
Glue		250	120	250	120	230	110
Glutamic Acid		200	95	200	95	200	95
Glycerin	Aqueous solution or liquid	285	140	275	135	230	110
Glycine	Aqueous solution or solid	75	25	75	25	75	25
Glycolic Acid		75	25	75	25	75	25
Heptane		285	140	275	135	230	110
Hexachloro-1,3-butadiene		125	50	125	50	125	50
Hexamethylenediamine		NR	NR	NR	NR	NR	NR
Hexamethylphosphotriamide		NR	NR	NR	NR	NR	NR
Hexane		285	140	275	135	230	110
Hexyl Alcohol		175	80	175	80	175	80
Hydrazine	Aqueous solution or liquid	200	95	200	95	200	95
Hydrazine Dihydrochloride	Aqueous solution or solid	75	25	75	25	75	25
Hydrazine Hydrate	Aqueous solution or liquid	125	50	125	50	125	50
Hydriodic Acid	Aqueous solution	275	135	275	135	230	110
Hydrobromic Acid	Up to 50% in water	275	135	275	135	230	110
Hydrochloric Acid	Up to "concentrated"	285	140	275	135	230	110
Hydrocyanic Acid	Aqueous solution	275	135	275	135	230	110
Hydrofluoric Acid	Up to 40% in water	250	120	250	120	230	110
Hydrofluoric Acid	41-100% in water	200	95	200	95	200	95
Hydrogen		285	140	250	120	230	110
Hydrogen Chloride		285	140	275	135	230	110
Hydrogen Cyanide		275	135	275	135	230	110
Hydrogen Fluoride		200	95	200	95	200	95
Hydrogen Peroxide	Up to 30% in water	160	70	200	95	200	95
Hydrogen Peroxide	90% in water	70	20	70	20	70	20
Hydrogen Sulfide		275	135	275	135	230	110
Hydrogen Sulfide	Aqueous solution	220	105	230	110	230	110
Hydroquinone		250	120	250	120	230	110
Hypochlorous Acid	Aqueous solution	70	20	70	20	70	20

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Chemical Substance	Concentration ^a	HOMOPOLYMER		FLEX 2850		FLEX 2800	
		Maximum ^{b, d} Temperature °F	°C	Maximum ^{b, d} Temperature °F	°C	Maximum ^{b, d} Temperature °F	°C
Iodine	10% in Non-Aqueous solvent	150	65	150	65	150	65
Iodine, gas		150	65	150	65	150	65
Iodoform		200	95	200	95	200	95
Isoamyl Ether		250	120	150	65	125	50
Isobutyl Alcohol		250	120	250	120	230	110
Isooctane		250	120	250	120	230	110
Isophorone		175	80	125	50	125	50
Isopropyl Alcohol	Aqueous solution or liquid	140	60	140	60	140	60
Isopropyl Chloride		100	40	100	40	100	40
Isopropyl Ether		125	50	125	50	125	50
Isopropylbenzene		100	40	100	40	100	40
Jet Fuel (JP4, JP5)		200	95	200	95	200	95
Kerosene		285	140	275	135	230	110
Lactic Acid	Aqueous solution or pure	125	50	125	50	125	50
Lanolin		250	120	250	120	230	110
Lard Oil		285	140	275	135	230	110
Lauric Acid		220	105	230	110	230	110
Lauroyl Chloride		250	120	250	120	230	110
Lauryl Mercaptan		200	95	200	95	200	95
Lauryl Sulfate		250	120	250	120	230	110
Lead Acetate	Aqueous solution or solid	275	135	230	110	230	110
Lead Chloride		250	120	250	120	230	110
Lead Nitrate	Aqueous solution or solid	250	120	250	120	230	110
Lead Sulfate		250	120	250	120	230	110
Lemon Oil		250	120	250	120	230	110
Linoleic Acid		250	120	250	120	230	110
Linseed Oil		285	140	275	135	230	110
Lithium Bromide	Aqueous solution or solid	230	110	230	110	220	105
Lithium Chloride	Aqueous solution or solid	250	120	250	120	230	110
Lubricating Oil		285	140	275	135	230	110
Magnesium Carbonate		285	140	275	135	230	110
Magnesium Chloride	Aqueous solution or solid	285	140	275	135	230	110
Magnesium Citrate		250	120	250	120	230	110
Magnesium Hydroxide		275	135	275	135	230	110
Magnesium Nitrate	Aqueous solution or solid	275	135	275	135	230	110
Magnesium Sulfate	Aqueous solution or solid	275	135	275	135	230	110
Maleic Acid	Aqueous solution or solid	275	135	250	120	230	110
Maleic Anhydride		75	25	NR	NR	NR	NR
Malic Acid	Aqueous solution or solid	250	120	250	120	230	110
Manganese Sulfate	Aqueous solution or solid	250	120	250	120	230	110
Mercuric Chloride		250	120	250	120	230	110
Mercuric Cyanide		250	120	250	120	230	110
Mercuric Nitrate	Aqueous solution or solid	275	135	275	135	230	110
Mercury		285	140	275	135	230	110
Methacrylic Acid		125	50	125	50	125	50
Methane		285	140	275	135	230	110
Methanesulfonic Acid	Aqueous solution or liquid	200	95	200	95	200	95
Methyl Acetate		100	40	100	40	100	40
Methyl Acrylate		100	40	75	25	75	25
Methyl Alcohol	Aqueous solution or liquid	285	140	275	135	230	110
Methyl Bromide		285	140	275	135	230	110
Methyl Chloride		285	140	275	135	230	110
Methyl Chloroacetate		75	25	NR	NR	NR	NR
Methyl Chloromethyl Ether		75	25	NR	NR	NR	NR
Methyl Ethyl Ketone		NR	NR	NR	NR	NR	NR
Methyl Isobutyl Ketone		NR	NR	NR	NR	NR	NR
Methyl Methacrylate		125	50	100	40	100	40
Methyl Salicylate		150	65	150	65	150	65
Methylamine		NR	NR	NR	NR	NR	NR
Methylchloroform		125	50	125	50	125	50
Methylene Bromide		175	80	175	80	175	80
Methylene Chloride		125	50	100	40	75	25

KYNAR® RESIN IS AVAILABLE
IN THE FOLLOWING
COMPONENTS:

- Cathodic protection cable
- Coatings
- Film
- Filter housings and components
- Foam block
- Membranes
- Molded parts
- Monofilament
- Nozzles
- Plastic-lined steel
- Pumps
- Rod
- Sheet
- Solid piping and fittings
- Tank linings
- Tower packing
- Tube (flexible and rigid)
- Valves
- Woven fabric

A special guide is available for short term or low pressure contact. This brochure called "KYNAR® Homopolymer Chemical Resistance for Waste Systems Guide", can be made available by contacting an Arkema technical representative.

KYNAR®
Polyvinylidene Fluoride

Chemical Substance	Concentration ^a	HOMOPOLYMER		FLEX 2850		FLEX 2800	
		Maximum ^{b, d} Temperature °F	°C	Maximum ^{b, d} Temperature °F	°C	Maximum ^{b, d} Temperature °F	°C
Methylene Iodine		200	95	200	95	200	95
Methylsulfuric Acid	Aqueous solution or liquid	125	50	125	50	125	50
Methyltrichlorosilane		150	65	150	65	150	65
Milk		250	120	250	120	230	110
Mineral Oil		285	140	275	135	230	110
Molasses		175	80	175	80	175	80
Morpholine	Aqueous solution or liquid	75	25	75	25	75	25
Motor Oil		275	135	275	135	230	110
Naphtha		275	135	275	135	230	110
Naphthalene		200	95	200	95	200	95
Nickel Acetate	Aqueous solution or solid	250	120	230	110	230	110
Nickel Chloride	Aqueous solution or solid	250	120	250	120	230	110
Nickel Nitrate	Aqueous solution or solid	285	140	275	135	230	110
Nickel Sulfate	Aqueous solution or solid	285	140	275	135	230	110
Nicotine		70	20	70	20	70	20
Nicotinic Acid		250	120	250	120	230	110
Nitric Acid	Up to 10% in water	175	80	175	80	175	80
Nitric Acid	11-70% in water	125	50	150	65	150	65
Nitric Acid, fuming		NR	NR	NR	NR	NR	NR
Nitrobenzene		75	25	75	25	75	25
Nitroethane		70	20	70	20	70	20
Nitrogen		285	140	275	135	230	110
Nitrogen Dioxide		170	75	170	75	170	75
Nitroglycerin		125	50	125	50	125	50
Nitromethane		125	50	125	50	125	50
Nitrotoluene		175	80	175	80	175	80
Nitrous Oxide		NR	NR	NR	NR	NR	NR
Octane		285	140	275	135	230	110
Octene		285	140	275	135	230	110
Oleic Acid		250	120	250	120	230	110
Oleum		NR	NR	NR	NR	NR	NR
Olive Oil		250	120	250	120	230	110
Oxalic Acid		125	50	125	50	125	50
Oxygen		285	140	275	135	230	110
Ozone		230	110	230	110	230	110
Palm Oil		230	110	212	100	200	95
Palmitic Acid		250	120	250	120	230	110
Paraffin		250	120	250	120	230	110
Paraffin Oil		250	120	250	120	230	110
Peanut Oil		250	120	250	120	230	110
Perchloric Acid	10% in water	200	95	200	95	200	95
Perchloric Acid	70% in water	125	50	125	50	125	50
Perchloroethylene		275	135	250	120	230	110
Perchloromethyl Mercaptan		125	50	125	50	125	50
Petrolatum		285	140	275	135	230	110
Petroleum		275	135	275	135	230	110
Phenol	5% in water	175	80	175	80	175	80
Phenol		125	50	125	50	125	50
1-Phenol-2-sulfonic Acid		125	50	125	50	125	50
Phenyl Ether		125	50	125	50	125	50
Phenylhydrazine		125	50	125	50	125	50
Phenylhydrazine Hydrochloride	Aqueous solution or solid	125	50	125	50	125	50
o-Phenylphenol		175	80	175	80	175	80
Phosgene		230	110	175	80	175	80
Phosphoric Acid	Less than 85% in water	275	135	275	135	230	110
Phosphoric Acid	85% in water	220	105	230	110	230	110
Phosphorus, red		75	25	75	25	75	25
Phosphorus, Oxychloride		NR	NR	NR	NR	NR	NR
Phosphorus, Pentachloride		200	95	200	95	200	95
Phosphorus, Pentoxide		200	95	200	95	200	95
Phosphorus, Trichloride		200	95	200	95	200	95
Phthalic Acid		200	95	200	95	200	95

Maximum usage temperatures for KYNAR® resin with selected chemicals.

Consult your KYNAR® products representative if you have any questions or for more recent results.

- a** pure substance unless otherwise indicated.
- b** temperatures in °F have been rounded to °C in 5 degree increments.
- c** NR indicates that KYNAR® resin is not recommended for use with the chemical at room temperature or at the temperature indicated.
- d** the temperatures listed are maximum values and do not take into account pressures, vacuums, mixtures, or close tolerances.

KYNAR® is a registered trademark of **Arkema Inc.**

Chemical Substance	Concentration ^a	HOMOPOLYMER		FLEX 2850		FLEX 2800	
		Maximum ^{b, d} Temperature °F	°C	Maximum ^{b, d} Temperature °F	°C	Maximum ^{b, d} Temperature °F	°C
Picric Acid		75	25	75	25	75	25
Plating Solutions: Brass		220	105	220	105	220	105
Cadmium		220	105	220	105	220	105
Chrome		220	105	220	105	220	105
Copper		220	105	220	105	220	105
Iron		220	105	220	105	220	105
Lead		220	105	220	105	220	105
Nickel		220	105	220	105	220	105
Rodium		220	105	220	105	220	105
Silver		220	105	220	105	220	105
Speculum		220	105	220	105	220	105
Tin		220	105	220	105	220	105
Zinc		220	105	220	105	220	105
Polyethylene Glycol		200	95	200	95	200	95
Polyvinyl Acetate		275	135	230	110	230	110
Polyvinyl Alcohol		275	135	275	135	230	110
Potassium		NR	NR	NR	NR	NR	NR
Potassium Acetate	Aqueous solution or solid	285	140	230	110	230	110
Potassium Alum	Aqueous solution or liquid	285	140	275	135	230	110
Potassium Aluminum Chloride		285	140	275	135	230	110
Potassium Bicarbonate	Aqueous solution or solid	200	95	200	95	200	95
Potassium Bisulfate	Aqueous solution or solid	285	140	275	135	230	110
Potassium Borate	Aqueous solution or solid	285	140	275	135	230	110
Potassium Bromate	Aqueous solution or solid	285	140	275	135	230	110
Potassium Bromide	Aqueous solution or solid	285	140	275	135	230	110
Potassium Carbonate	Aqueous solution or solid	285	140	275	135	230	110
Potassium Chlorate		200	95	200	95	200	95
Potassium Chloride	Aqueous solution or solid	285	140	275	135	230	110
Potassium Chromate	Aqueous solution or solid	285	140	275	135	230	110
Potassium Cyanide	Aqueous solution or solid	285	140	275	135	230	110
Potassium Dichromate		285	140	275	135	230	110
Potassium Ferricyanide	Aqueous solution or solid	285	140	275	135	230	110
Potassium Ferrocyanide	Aqueous solution or solid	285	140	275	135	230	110
Potassium Fluoride	Aqueous solution or solid	285	140	275	135	230	110
Potassium Hydroxide	5 to 10% in water	NR	NR	NR	NR	NR	NR
Potassium Hydroxide	Greater than 50% in water	NR	NR	NR	NR	NR	NR
Potassium Hypochlorite	Aqueous solution	200	95	200	95	200	95
Potassium Iodide	Aqueous solution or solid	285	140	250	120	230	110
Potassium Nitrate	Aqueous solution or solid	285	140	250	120	230	110
Potassium Perborate		285	140	275	135	230	110
Potassium Perchlorate		200	95	200	95	200	95
Potassium Permanganate	Aqueous solution or solid	250	120	250	120	230	110
Potassium Persulfate		125	50	125	50	125	50
Potassium Sulfate	Aqueous solution or solid	285	140	275	135	230	110
Potassium Sulfide		285	140	275	135	230	110
Propane		285	140	275	135	230	110
Propyl Acetate		100	40	75	25	75	25
Propyl Alcohol	Aqueous solution or liquid	150	65	150	65	150	65
Propylamine		NR	NR	NR	NR	NR	NR
Propylene Dibromide		200	95	200	95	200	95
Propylene Dichloride		200	95	200	95	200	95
Propylene Glycol	Aqueous solution or liquid	150	65	150	65	150	65
Propylene Oxide		NR	NR	NR	NR	NR	NR
Pyridine		NR	NR	NR	NR	NR	NR
Pyrogallol	Aqueous solution or solid	125	50	125	50	125	50
Refrigerant 11		212	100	212	100	212	100
Refrigerant 12		212	100	212	100	212	100
Refrigerant 13		212	100	212	100	212	100
Refrigerant 14		212	100	212	100	212	100
Refrigerant 21		212	100	212	100	212	100
Refrigerant 22		212	100	212	100	212	100
Refrigerant 113		212	100	212	100	212	100

KYNAR® RESIN IS AVAILABLE
IN THE FOLLOWING COLORS:

Natural
Black
Red
Pigments are also available

THE FOLLOWING
PROPERTIES MAKE KYNAR®
A VERSATILE ENGINEERING
RESIN:

Mechanical strength
Chemical resistance
Resistance to weathering
High abrasion resistance
Low permeation values
Pure in "natural" form
FDA compliance
Flame and smoke approvals
NSF listing
3A listing
CRC Kosher approval
Ease of processing

KYNAR®
Polyvinylidene Fluoride

Chemical Substance	Concentration ^a	HOMOPOLYMER Maximum ^{b, d} Temperature		FLEX 2850 Maximum ^{b, d} Temperature		FLEX 2800 Maximum ^{b, d} Temperature	
		°F	°C	°F	°C	°F	°C
Refrigerant 114		212	100	212	100	212	100
Salicylaldehyde		125	50	125	50	125	50
Salicylic Acid		200	95	200	95	200	95
Selenic Acid	Aqueous solution or pure	150	65	150	65	150	65
Silicon Tetrachloride		125	50	125	50	125	50
Silicone Oil		250	120	250	120	230	110
Silver Cyanide		285	140	275	135	230	110
Silver Nitrate	Aqueous solution or solid	285	140	275	135	230	110
Silver Sulfate		250	120	250	120	230	110
Sodium		NR	NR	NR	NR	NR	NR
Sodium Acetate	Aqueous solution or solid	285	140	230	110	230	110
Sodium Amalgam		NR	NR	NR	NR	NR	NR
Sodium Benzoate	Aqueous solution or solid	285	140	275	135	230	110
Sodium Bicarbonate	Aqueous solution or solid	285	140	275	135	230	110
Sodium Bisulfate	Aqueous solution or solid	285	140	275	135	230	110
Sodium Bisulfite	Aqueous solution or solid	285	140	275	135	230	110
Sodium Bromate	Aqueous solution or solid	200	95	200	95	200	95
Sodium Bromide	Aqueous solution or solid	285	140	275	135	230	110
Sodium Carbonate	Aqueous solution or solid	285	140	275	135	230	110
Sodium Chlorate	Aqueous solution or solid	250	120	250	120	230	110
Sodium Chlorite	Aqueous solution or solid	250	120	250	120	230	110
Sodium Chromate	Aqueous solution or solid	200	95	200	95	200	95
Sodium Cyanide	Aqueous solution or solid	275	135	275	135	230	110
Sodium Dichromate	Aqueous solution or solid	200	95	200	95	200	95
Sodium Dithionite	Aqueous solution or solid	100	40	100	40	100	40
Sodium Ferricyanide	Aqueous solution or solid	275	135	275	135	230	110
Sodium Ferrocyanide	Aqueous solution or solid	275	135	275	135	230	110
Sodium Fluoride	Aqueous solution or solid	285	140	275	135	230	110
Sodium Fluosilicate		200	95	200	95	200	95
Sodium Hydrogen Phosphate	Aqueous solution or solid	250	120	250	120	230	110
Sodium Hydroxide	Up to 10% in water *	75	25	75	25	125	50
Sodium Hydroxide	Greater than 50% in water	NR	NR	NR	NR	NR	NR
Sodium Hypochlorite	Up to 5% in water	275	135	230	110	230	110
Sodium Hypochlorite	6-15% in water	200	95	200	95	200	95
Sodium Iodide	Aqueous solution or solid	285	140	275	135	230	110
Sodium Nitrate	Aqueous solution or solid	275	135	275	135	230	110
Sodium Nitrite	Aqueous solution or solid	275	135	275	135	230	110
Sodium Palmitate		250	120	250	120	230	110
Sodium Perchlorate	Aqueous solution or solid	250	120	250	120	230	110
Sodium Peroxide		200	95	200	95	200	95
Sodium Phosphate	Aqueous solution or solid	285	140	275	135	230	110
Sodium Thiocyanate	Aqueous solution or solid	250	120	250	120	230	110
Sodium Thiosulfate	Aqueous solution or solid	275	135	275	135	230	110
Sour Crude Oil		285	140	275	135	230	110
Soybean Oil		250	120	250	120	230	110
Stannic Chloride	Aqueous solution or solid	285	140	275	135	230	110
Stannous Chloride	Aqueous solution or solid	285	140	275	135	230	110
Starch		230	110	212	100	200	95
Stearic Acid		285	140	250	120	230	110
Stilbene		175	80	175	80	175	80
Styrene		175	80	180	85	180	85
Succinic Acid		150	65	150	65	150	65
Sugar Syrup		285	140	275	135	230	110
Sulfur		250	120	250	120	230	110
Sulfur Chloride		75	25	75	25	75	25
Sulfur Dichloride		75	25	75	25	75	25
Sulfur Dioxide		175	80	175	80	175	80
Sulfur Trioxide		NR	NR	NR	NR	NR	NR
Sulfuric Acid	Up to 60% in water	250	120	250	120	230	110
Sulfuric Acid	60-93% in water	200	95	200	95	200	95
Sulfuric Acid	93-98% in water	125	50	150	65	150	65
Sulfuric Acid, fuming		NR	NR	100	40	140	60

Maximum usage temperatures for KYNAR® resin with selected chemicals.

Consult your KYNAR® products representative if you have any questions or for more recent results.

- a pure substance unless otherwise indicated.
- b temperatures in °F have been rounded to °C in 5 degree increments.
- c NR indicates that KYNAR® resin is not recommended for use with the chemical at room temperature or at the temperature indicated.
- d the temperatures listed are maximum values and do not take into account pressures, vacuums, mixtures, or close tolerances.

* KYNAR® homopolymer is generally acceptable to pH 12. KYNAR® Flex copolymers are generally acceptable to pH 13.5.

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Chemical Substance	Concentration ^a	HOMOPOLYMER Maximum ^{b, d} Temperature		FLEX 2850 Maximum ^{b, d} Temperature		FLEX 2800 Maximum ^{b, d} Temperature	
		°F	°C	°F	°C	°F	°C
Sulfuryl Chloride		NR	NR	NR	NR	NR	NR
Sulfuryl Fluoride		75	25	75	25	75	25
Tall Oil		285	140	275	135	230	110
Tallow		285	140	275	135	230	110
Tannic Acid		230	110	230	110	230	110
Tar		250	120	250	120	230	110
Tartaric Acid	Aqueous solution or solid	250	120	250	120	230	110
1,1,2,2,-Tetrabromoethane		250	120	250	120	230	110
1,1,2,2,-Tetrachloroethane		250	120	250	120	230	110
2,3,4,6-Tetrachlorophenol		150	65	150	65	150	65
Tetraethyllead		285	140	275	135	230	110
Tetrahydrofuran	Aqueous solution or liquid	NR	NR	NR	NR	NR	NR
Tetramethylammonium Hydroxide	Up to 10% in water	150	65	150	65	200	95
Tetramethylurea		NR	NR	NR	NR	NR	NR
Thioglycol		75	25	75	25	75	25
Thioglycolic Acid		175	80	175	80	175	80
Thionyl Chloride		NR	NR	NR	NR	NR	NR
Thiophosphoryl Chloride		NR	NR	NR	NR	NR	NR
Thread Cutting Oils		230	110	212	100	200	95
Titanium Tetrachloride		150	65	150	65	150	65
Toluene		175	80	175	80	175	80
Toluenesulfonyl Chloride		125	50	125	50	125	50
Tomato Juice		230	110	230	110	230	110
Tributyl Phosphate		75	25	75	25	75	25
Trichloroacetic Acid	Up to 10% in water	200	95	200	95	200	95
Trichloroacetic Acid	50% in water to pure	125	50	125	50	125	50
1,2,4-Trichlorobenzene		200	95	200	95	200	95
1,1,2-Trichloroethane		150	65	150	65	150	65
Trichloroethylene		285	140	250	120	230	110
2,4,5-Trichlorophenol		150	65	150	65	150	65
Tricresyl Phosphate		NR	NR	NR	NR	NR	NR
Triethanolamine	Aqueous solution or liquid	125	50	125	50	125	50
Triethyl Phosphate		NR	NR	NR	NR	NR	NR
Triethylamine		125	50	100	40	100	40
Trifluoroacetic Acid	50% in water	200	95	200	95	200	95
Trifluoroacetic Acid		125	50	125	50	125	50
Trimethylamine	Aqueous solution or gas	150	65	125	50	125	50
Turpentine		285	140	275	135	230	110
Urea	Aqueous solution or solid	250	120	250	120	230	110
Varnish		250	120	250	120	230	110
Varsol		250	120	250	120	230	110
Vegetable Oil		285	140	275	135	230	110
Vinegar		230	110	230	110	230	110
Vinyl Acetate		250	120	230	110	230	110
Vinyl Chloride		200	95	200	95	200	95
Vinylidene Chloride		200	95	200	95	200	95
Water		285	140	275	135	230	110
Water, salt		285	140	275	135	230	110
Water, sewage		275	135	275	135	230	110
Whiskey		230	110	230	110	230	110
Wine		230	110	230	110	230	110
Xylene		200	95	200	95	200	95
Zinc Acetate	Aqueous solution	250	120	250	120	230	110
Zinc Bromide	Aqueous solution or solid	250	120	250	120	230	110
Zinc Chloride	Aqueous solution or solid	250	120	250	120	230	110
Zinc Nitrate	Aqueous solution or solid	285	140	250	120	230	110
Zinc Sulfate	Aqueous solution or solid	285	140	250	120	230	110

KYNAR® RESIN CAN BE:

- Extruded
- Welded
- Machined
- Thermoformed
- Injection molded
- Solubilized
- Alloyed with acrylics
- Rotomolded
- Powder-coated
- Foamed

* There are over 20 grades of KYNAR® resins available including flexible copolymers. Contact Arkema's Fluoropolymers for more information.

KYNAR®
Polyvinylidene Fluoride

The ratings given on the previous pages are a guide and do not constitute a warranty of any kind, expressed or implied, with respect to the performance of KYNAR® polyvinylidene fluoride in any specific application.

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Before handling this material, read and understand the MSDS (Material Safety Data Sheet) for additional information on personal protective equipment and for safety, health and environmental information.

For environmental, safety and toxicological information, contact our Customer Service Department at 1-215-419-7000 to request a Material Safety Data Sheet or visit our website at www.kynar.com.

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