

CHEMICAL	%	TEMP C	TEMP F	ABS	DELTRIN	KYNAR	NYLON	MABS	POLYCARB.	POLYPROP.	POLYSULFONE	PEEK
Acetic Acid	5%	23 C	73 F	Excellent	Unsatisfactory	Excellent	Satisfactory	Satisfactory	Satisfactory	Excellent	Excellent	Excellent
Acetone	100%	50 C	122 F	Satisfactory	Unsatisfactory	Unsatisfactory	Satisfactory	Unsatisfactory	Unsatisfactory	Excellent	Unsatisfactory	Excellent
Acetophenone	100%	24 C	75 F	Satisfactory	—	Unsatisfactory	Excellent	—	—	Satisfactory	—	—
Acetylene	100%	24 C	75 F	—	—	Excellent	Excellent	—	—	—	—	Excellent
Air	100%	82 C	180 F	Excellent	Excellent	Excellent	Excellent	—	—	—	Excellent	Excellent
Ammonia, Liquid	100%	24 C	75 F	Satisfactory	—	Unsatisfactory	Satisfactory	—	Unsatisfactory	Excellent	Excellent	Excellent
Ammonium Hydroxide	10%	23 C	73 F	Satisfactory	—	Excellent	Excellent	—	Unsatisfactory	Excellent	Excellent	Excellent
Ammonium Hydroxide	10%	70 C	158 F	Unsatisfactory	—	Excellent	Unsatisfactory	—	Unsatisfactory	Excellent	Excellent	Excellent
Barium Sulfide	100%	24 C	75 F	Excellent	Excellent	Excellent	Satisfactory	—	—	Excellent	—	—
Benzene	100%	23 C	73 F	Satisfactory	Excellent	Excellent	Excellent	—	Unsatisfactory	Satisfactory	Unsatisfactory	Excellent
Bleach	100%	23 C	73 F	Satisfactory	Unsatisfactory	Excellent	Satisfactory	—	Unsatisfactory	Satisfactory	Excellent	Excellent
Boric Acid	7%	35 C	95 F	Excellent	Excellent	Excellent	Unsatisfactory	—	Excellent	Excellent	—	Excellent
Calcium Carbonate	Sat. sol.	24 C	75 F	Excellent	—	Excellent	—	—	—	Excellent	—	Excellent
Carbon Dioxide	100%	50 C	122 F	Satisfactory	Excellent	Excellent	Excellent	—	—	Excellent	—	Excellent
Carbon Monoxide	100%	50 C	122 F	Satisfactory	—	Excellent	Excellent	—	—	Excellent	—	Excellent
Carbon Tetrachloride	100%	50 C	122 F	Unsatisfactory	—	Excellent	Excellent	—	Unsatisfactory	Unsatisfactory	Unsatisfactory	Excellent
Chlorine Water	Dilute	23 C	73 F	Unsatisfactory	—	Excellent	Satisfactory	—	Unsatisfactory	Unsatisfactory	Satisfactory	Unsatisfactory
Chlorine Water	Concen.	23 C	73 F	Unsatisfactory	—	Excellent	Unsatisfactory	—	Unsatisfactory	Unsatisfactory	Unsatisfactory	Unsatisfactory
Chlorobenzene	100%	23 C	73 F	Satisfactory	—	Excellent	Excellent	—	Unsatisfactory	Unsatisfactory	Unsatisfactory	Excellent
Chlorofluorocarbon 11	100%	24 C	75 F	—	—	Excellent	Excellent	—	Satisfactory	—	Excellent	Excellent
Chloroform	100%	23 C	73 F	Unsatisfactory	Satisfactory	Excellent	Satisfactory	—	Unsatisfactory	Unsatisfactory	Unsatisfactory	Excellent
Cyclohexanone	100%	24 C	75 F	Satisfactory	—	Excellent	Excellent	—	Unsatisfactory	Satisfactory	Unsatisfactory	Excellent
Dichlorethylene	100%	23 C	73 F	—	—	Excellent	Satisfactory	—	—	Excellent	Unsatisfactory	Excellent
Ethanol	95%	50 C	122 F	Satisfactory	—	Excellent	Excellent	—	Satisfactory	Excellent	Satisfactory	Excellent
Ethyl Acetate	95%	50 C	122 F	Satisfactory	—	Unsatisfactory	Excellent	—	Unsatisfactory	Satisfactory	Unsatisfactory	Excellent
Ethylene Glycol	100%	23 C	73 F	Excellent	Satisfactory	Excellent	Excellent	Unsatisfactory	Satisfactory	Excellent	Excellent	Excellent
Ethylene Oxide	100%	24 C	75 F	Unsatisfactory	—	Excellent	Satisfactory	—	Satisfactory	Satisfactory	Excellent	Excellent
Ethylene Oxide	100%	79 C	175 F	Unsatisfactory	—	Excellent	Unsatisfactory	—	Satisfactory	Unsatisfactory	Excellent	Excellent
Fatty Acids	—	—	—	—	Excellent	Excellent	—	—	—	Excellent	—	Excellent
Fluorine	100%	23 C	73 F	Unsatisfactory	—	Excellent	Unsatisfactory	—	—	—	—	Unsatisfactory
Formaldehyde	37%	24 C	75 F	Unsatisfactory	Excellent	Excellent	—	—	Unsatisfactory	Excellent	Unsatisfactory	Excellent
Gasoline	100%	85 C	185 F	Excellent	Satisfactory	Excellent	Excellent	—	Unsatisfactory	Satisfactory	Satisfactory	Excellent
Glucose	Concen.	24 C	75 F	Excellent	—	Excellent	—	—	—	Excellent	—	—
Glycerin	100%	24 C	75 F	Excellent	—	Excellent	—	—	Excellent	Excellent	Excellent	—
Hydrochloric Acid	2%	23 C	73 F	Excellent	Satisfactory	Excellent	Excellent	—	Excellent	Excellent	Excellent	Excellent
Hydrochloric Acid	10%	25 C	77 F	Excellent	Satisfactory	Excellent	Unsatisfactory	—	Excellent	Excellent	Excellent	Excellent
Hydrofluoric Acid	10%	23 C	73 F	Satisfactory	—	Excellent	Unsatisfactory	—	—	Excellent	Excellent	Excellent
Hydrogen Peroxide	1%	24 C	75 F	Excellent	Unsatisfactory	Excellent	Satisfactory	Satisfactory	Excellent	Excellent	Excellent	Excellent
Hydrogen Peroxide	5%	43 C	110 F	Satisfactory	Unsatisfactory	Excellent	Unsatisfactory	Satisfactory	Excellent	Satisfactory	Excellent	Excellent
Isopropanol	100%	23 C	73 F	Unsatisfactory	Excellent	Excellent	Excellent	Unsatisfactory	Excellent	Excellent	Satisfactory	Excellent
Kerosene	100%	85 C	185 F	Satisfactory	—	Excellent	Excellent	—	Satisfactory	Satisfactory	Satisfactory	Excellent
Methyl Ethyl Ketone	100%	50 C	122 F	Satisfactory	—	Unsatisfactory	Excellent	—	Unsatisfactory	Satisfactory	Unsatisfactory	—
Methylene Chloride	100%	23 C	73 F	Unsatisfactory	—	Excellent	Satisfactory	—	Unsatisfactory	Excellent	Unsatisfactory	Excellent
Methanol	100%	23 C	73 F	Unsatisfactory	—	Excellent	Excellent	Satisfactory	Satisfactory	Excellent	Satisfactory	Excellent
Nitric Acid	10%	23 C	73 F	Satisfactory	—	Excellent	Unsatisfactory	Unsatisfactory	Unsatisfactory	Excellent	Satisfactory	Excellent
Oxygen	100%	24 C	75 F	—	—	Excellent	Satisfactory	—	—	—	—	Excellent
Ozone	100%	43 C	110 F	Satisfactory	—	Excellent	Unsatisfactory	—	Unsatisfactory	—	—	Excellent
Phenol	90%	23 C	73 F	Unsatisfactory	Unsatisfactory	Excellent	Unsatisfactory	—	—	Excellent	—	Unsatisfactory
Phosphoric Acid	5%	98 C	208 F	Satisfactory	Unsatisfactory	Excellent	Unsatisfactory	—	Unsatisfactory	Excellent	Excellent	Excellent
Propane	100%	23 C	73 F	Satisfactory	—	Excellent	Excellent	—	—	—	—	Excellent
Sodium Bicarbonate	Concen.	24 C	75 F	Excellent	Excellent	Excellent	Excellent	—	—	Excellent	Excellent	Excellent
Sodium Chloride	10%	23 C	73 F	Excellent	—	Excellent	Excellent	Satisfactory	—	Excellent	Excellent	Excellent
Sodium Chloride	Sat. sol.	24 C	75 F	Excellent	—	Excellent	Excellent	—	—	Excellent	Excellent	Excellent
Sodium Hydroxide	10%	70 C	158 F	Satisfactory	—	Excellent	Satisfactory	Satisfactory	—	Excellent	Excellent	Excellent
Steam	—	120 C	248 F	Unsatisfactory	—	Excellent	Unsatisfactory	—	Unsatisfactory	Satisfactory	Excellent	Excellent
Sulfuric Acid	30%	23 C	73 F	Satisfactory	Unsatisfactory	Excellent	Unsatisfactory	Satisfactory	Excellent	Excellent	Excellent	Satisfactory
Tetrahydrofuran	100%	23 C	73 F	Satisfactory	—	Unsatisfactory	Excellent	—	—	Unsatisfactory	—	Excellent
Toluene	100%	50 C	122 F	Satisfactory	Unsatisfactory	Excellent	Excellent	Unsatisfactory	Unsatisfactory	Unsatisfactory	Unsatisfactory	Excellent
Trichloroethylene	100%	23 C	73 F	Satisfactory	—	Excellent	Satisfactory	—	Unsatisfactory	Unsatisfactory	Unsatisfactory	Excellent
Water	100%	79 C	175 F	Excellent	—	Excellent	Excellent	Satisfactory	Unsatisfactory	Excellent	Excellent	Excellent

The data presented here is for reference only. It was compiled primarily by the resin manufacturers to provide our customers with a means of comparing the characteristics of components at the time of publication. The particular conditions of your use and application of our products are beyond our control. Thus, it is imperative that you test our products in your specific application to determine their suitability. All information is provided without implied or expressed warranty or guarantee by Value Plastics® or other manufacturers. None of the information provided constitutes a recommendation or endorsement of any kind by Value Plastics®.





TECHNICAL:
Typical Resin Properties

<i>Test Method/Material Property</i>	ASTM Test Method	Kynar®	Polycarb	Radiation Stable PC	Polypro	Nylon^a	GF Nylon^a	ABS	MABS	Polysulfone	PEEK	Delrin
Tensile Strength	D638	5,400	10,000	9,800	—	12,000	27,000	4,800	—	—	—	—
Elongation at Break, %	D638	100-400	120	150	375	300	3	50	12	50-100	20	40
Tensile Yield Strength, psi	D638	6,500	9,200	9,800	4,400	12,000	—	5,700	6,960	10,200	14,500	9,900
Flexural Modulus, kpsi	D790	360	330	350	170	410	1,300	330	—	390	594	450
Rockwell Hardness D	D785	—	R118	R118	R80-102	R121	—	R107	—	—	—	R122
Rockwell Hardness M	—	—	M75	M72	—	M79	M101	—	—	M69	—	M89
Shore Hardness D	D2240	D76-80	—	—	—	—	—	—	—	—	—	—
Coef. of Linear 10-5 in/in/°F	D696	7.6	3.9	3.8	—	4	1.3	5.5	—	3.1	<Tg 2.6 >Tg 6.0	—
Deflection Temp°F @264psi	D648	244	266	252	—	194	480	173	194	345	320	216
Deflection Temp°F @66psi	D648	—	273	—	190	455	—	—	201	358	—	332
Water Absorption, %, 24 h	D570	0.015	0.15	0.15	0	1.2	0.7	0.25- 0.40	0.7	0.3	0.5	0.4
Izod Impact, (Notched) ft-lb/in	D256	3.1	16.0	14.0	0.5	1.0	2.2	6.0	1.31	1.3	1.12	—





TECHNICAL:
Sterilization Stability and Regulatory Status

<i>Sterilization Method</i> Material	Gamma Radiation	Ethylene Oxide	Autoclave	Regulatory Status of Base Resin
Kynar 1000 HD	Highly compatible. Will discolor to brownish hue. Physical properties typically improve	Excellent	Excellent	USP Classification VI, 21 CFR 177.2510 Food Contact
Polycarbonate Makrolon 2558-1112	Compatible to 10MRad dose with minor loss of physical properties. Will discolor to light yellow-green hue	Highly compatible with 100% EtO. May stress crack if sterilized in EtO/CFC mix, due to molding stresses	Not Recommended. May craze or stress crack due to molding stresses	USP Classification VI
Radiation Stable Polycarbonate Calibre MegaRad 2081 15	Excellent up to 10MRad dose with minor loss of physical properties. Light violet hue turns clear upon sterilization	Highly compatible. Withstands normal EtO sterilization conditions but multiple exposures can reduce tensile elongation properties	Not recommended	USP Classification VI
Polypropylene PD626	Excellent up to commonly used sterilization doses (6MRad)	Fair. May stress crack in EtO/ CFC mix due to molding stresses	Poor. Components may distort due to low heat deflection temperatures	USP Classification VI
Nylon Zytel 101F	Physically compatible with commonly used sterilization doses, but may discolor to brownish hue	Very good. Some susceptibility to oxidizing agents	Very good. Components may swell slightly due to water absorption	—
ABS Magnum 9020	Compatible to 1 MRad dose with some loss of impact strength. Some discoloration to slight brownish hue	Not recommended	Poor. Components may distort due to low heat deflection temperatures	21 CFR 181.32(a)(3)(I) Food Contact
ABS Terlux 2802 TR 27768 Methyl Methacrylate ABS	Withstands gamma radiation sterilization up to 5 Mrads without yellowing	Good	—	USP Classification VI
PEEK	Excellent	Excellent	Excellent	—
Polysulfone P1700 MG11	Highly compatible. Will discolor to brownish hue	Excellent	Excellent	USP Classification VI, 21 CFR 177.1655 Food Contact
Acetal Delrin 500P	Compatible up to 1 MRad	Excellent	Very Good. 100x15 minute cycles at 250 degrees F.	—
Polysulfone P1700 CL2611	Highly compatible. Will discolor to brownish hue	Excellent	Excellent	21 CFR 177.1655 Food Contact
Polyurethane Pellethane 2363-80AE (Tubing)	Excellent. Some discoloration may occur but reverses over time. No significant effects on physical properties	Excellent. No noticeable effects on material properties.	Not recommended. Hydrolysis of polyurethane may create aromatic amine impurities	USP Classification VI
Polyethylene 2020T (Tubing)	Excellent. Tensile strength increases and modulus of elasticity decreases due to cross-linking of polymer	Excellent	Not recommended. Tubing may distort at common autoclave temperatures	21 CFR 177.1520 Food Contact
PVC 7511 G-015 (Tubing)	Highly compatible. Blue tint of the material will tend to clear upon irradiation	Highly compatible with minimal discoloration or loss of physical properties	Not recommended due to loss of physical properties at high temperatures	USP Classification VI, 21 CFR Food Contact

