

General Properties of Plastics

Physical Properties

Plastics	Max Temp. (°C)	Transparency	Autoclavable ¹	Sterilization			Specific gravity	Flexibility	Brittleness temp. (°C)	Permeability cc x mm sec x cm ² x cmHg x 10 ⁻¹⁰			Tensile strength (Psi)	Absorption (%)
				Gas	Dry heat	Chemical				N2	O2	CO2		
HDPE	110	Transluc.	With caution ²	Yes	No	Yes	0.95	Rigid	-100	3	10	45	4000	0.01
LDPE	90	Transluc.	No	Yes	No	Yes	0.92	Excel.	-100	20	20	280	2000	0.01
PP	130	Transluc.	Yes	Yes	No	Yes	0.90	Rigid	-20	4	25	90	5000	0.02
PC	160	Clear	Yes ³	Yes	No	Yes	1.20	Rigid	-135	3	85	85	8000	0.35
PTFE	300	Opaque	Yes	Yes	Yes	Yes	1.70	Mod.	-100	—	—	—	6500	0.10
PVC	75	Clear	No	Yes	NO	Yes	1.34	Rigid	-30	0.5	1	10	6500	0.06
ABS	100	Opaque	No	Yes	No	Yes	1.05	Rigid	-20	2	6	35	7000	0.30
PS	80	Clear	No	Yes	NO	Yes	1.04	Rigid	0	—	25	—	6000	0.05

Remark

- Autoclaving: clean and rinse with distilled water before autoclaving.
Certain chemicals which have no appreciable effect on resins at room temperature may cause deterioration at autoclaving temperature unless removed with distilled water beforehand...
- Can be autoclaved at 120°C for 20 minutes.
- Autoclaving reduces mechanical strength. Do not use PC vessels for vacuum applications if they have been autoclaved.
• GAS-Ethylene oxide • DRY HEAD - AT 160°C • CHEMICAL - Benzalkonium chloride, formaline, ethanol, etc.

Chemical Properties

Reagent (20 °C)	LDPE	HDPE	PS	PP	PC	PTFE	TPX
Inorganic acids	E	E	B	E	B	E	E
Organic acids	E	E	B	E	B	E	E
Oxidizing agents conc.	B	B	S	B	N	E	B
Alcohols	E	B	E	E	B	E	E
Aldehydes	B	B	S	B	S	E	B
Amines	B	B	E	B	N	E	B
Bases	E	E	B	E	N	E	E
Ketones	B	B	N	B	N	E	B
Ethers	B	B	S	B	S	E	B
Esters	E	E	N	E	N	E	E
Glycols	E	E	NA	E	B	E	E
Aliphatic hydrocarbons	B	B	S	B	S	E	B
Aromatic hydrocarbons	B	B	S	B	N	E	S
Halogenated hydrocarbons	B	B	N	B	N	E	S
Mineral oils	S	E	B	S	E	E	E
Vegetable oils	B	B	E	B	B	E	B
Lubricating oils	B	E	B	E	B	E	E

Chemical Resistance Chart

Reagent	HDPE		PC		PP		LDPE		PTFE		TPX	
	20 °C	50 °C	20 °C	50 °C	20 °C	50 °C	20 °C	50 °C	20 °C	50 °C	20 °C	50 °C
Acetaldehyde	B	S	S	N	B	N	B	N	E	E	B	N
Acetone	E	E	N	N	E	E	E	E	E	E	E	E
Acetic acid	E	E	E	B	E	E	E	E	E	E	E	E
Aluminum hydroxide	E	E	S	N	E	B	E	B	E	E	E	B
Ammonium chloride	E	E	E	E	E	E	E	E	E	E	E	E
Ammonium hydroxide 5%	E	E	S	N	E	E	E	E	E	E	E	E
Ammonium hydroxide 28%	E	E	N	N	E	B	E	B	E	E	E	B
Amyl chloride	S	N	N	N	N	N	N	N	E	E	N	N
Aniline	E	B	S	N	B	S	E	B	E	E	B	S
Benzaldehyde	E	E	S	N	E	B	E	B	E	E	E	B
Benzene	B	B	N	N	B	S	S	N	E	E	B	S
Boric acid	E	E	E	E	E	E	E	E	E	E	E	E
Bromine	S	N	S	N	N	N	N	N	E	E	N	N
Bromoform	N	N	N	N	N	N	N	N	E	E	N	N
Butadiene	S	N	N	N	N	N	N	N	E	E	N	N
Butyl acetate	E	B	N	N	B	S	B	S	E	E	B	S
Butyl alcohol	E	E	B	S	E	E	E	B	E	E	E	B
Butyric acid	S	N	S	N	N	N	N	N	E	E	N	N
Calcium hydroxide	E	E	N	N	E	E	E	E	E	E	E	E
Calcium hypochloride	E	E	S	N	E	E	E	E	E	E	E	B
Carbon disulphide	N	N	N	N	N	N	N	N	E	E	S	N
Carbon tetrachloride	B	S	N	N	B	S	S	N	E	E	N	N