CHEMICAL AND PHYSICAL PROPERTIES OF PLASTICS

The information in this chart has been supplied to Biotix by various reputable raw material manufacturers, and is to be used only as a guide in selecting products for appropriate chemical compatibility. These values are based on laboratory tests with raw materials. Plastic components produced from these raw materials are frequently subject to influences that cannot be recognized in standard tests (temperature, pressure, material stress, etc.). In critical cases, it is essential that a test is carried out first to your unique protocol. Biotix does not warrant (neither express nor implied) that the information in this chart is accurate or complete or that any material is suitable for any purpose. No legal claims can be derived from this information, nor do we accept any liability for it.

General Physical Properties

Classes of substances; 20°C	HDPE	LDPE	PC	PP
Acids, weak or dilute	E	E	E	E
Acids, strong or concentrated	E	E	G	E
Alcohols, aliphatic	E	E	G	E
Aldehydes	G	G	F	G
Bases	E	E	N	E
Esters	G	G	N	G
Hydrocarbons, aliphatic	F	G	F	G
Hydrocarbons, aromatic	F	G	N	F
Hydrocarbons, halogenated	N	F	N	F
Keytones	G	G	N	G
Oxidizing agents, strong	F	F	N	F

Plastics Acronym Chart

Low Density Polyethylene	LDPE
High Density Polyethylene	HDPE
Polycarbonate	PC
Polypropylene	PP

Explanation of Footnotes

1 - Satisfactory to 72°F (22°C)
2 - Satisfactory to 120°F (48°C)
3 - Satisfactory to 90°F (32°C)
4 - Satisfactory to 120°F (93°C)

A = No effect
B = Minor Effect
C = Moderate Effect
D = Severe Effect; Not Recommended
E = No damage after 30 days of constant exposure
G = Little or no damage after 30 days of constant exposure
F = Some effect after seven days of constant exposure; may see cracking, crazing, loss of strength
N = Not recommended for continuous use
- = Not Available

Chemical Resistance Chart

Reagent	HDPE	LDPE	PC	PP
Acetaldehyde	C	C	C1	A1
Acetamide	A	A	D	A1
Acetate Solvent	A	A	-	B1
Acetic Acid	A	A2	B1	B1
Acetic Acid 20%	A	A	A1	A1
Acetic Acid 80%	A	D	B1	A
Acetic Acid, GlacialD	D	B1	A1	D
Acetic Anhydride	C	D	D	B1
Acetone, 50% water	-	-	-	A
Acetone	D	B1	D	A
Acetonitrile	A	A	D	A1
Acetophenone	C	D	D	C
Acetyl Chloride (dry)	-	D	D	D
Acetylene	-	D	D	A1
Acrylonitrile	A	A	D	A1
Adipic Acid	A	A	-	B2
Alanine	A	A	A	A
Alcohols				
- Amyl	A	B2	B1	B1
- Benzyl	B	D	-	A
- Butyl	-	A	A2	A
- Diacetone	A	B1	-	B2
- Ethyl	A	B	B2	A
- Isobutyl	A	A2	-	A1
- Isopropyl	a	A2	A2	A2

Reagent	HDPE	LDPE	PC	PP
- Methyl	A	A1	B1	A2
- Propyl	-	A2	-	A
Allyl Chloride	A	-	-	A
Aluminum Acetate (satured)	-	-	-	A
Aluminum Chloride	A	B2	A1	A
Aluminum Chloride 20%	A	B2	A1	A
Aluminum Fluoride	A	A2	-	A
Aluminum Hydroxide	A	A2	B1	A
Aluminum Nitrate	-	A2	A1	A2
Aluminum Potassium Sulfate 10%	A	A2	A1	A
Aluminum Potassium Sulfate 100%	A	A2	A2	A
Aluminum Sulfate	A	A2	A	A
Alums	-	A	-	A
Amines	B	C1	-	B2
Ammonia 10%	A	C1	D	A2
Ammonia Nitrate	-	A	-	A
Ammonia anhydrous	A	B2	D	A
Ammonia liquid	A	C1	D	A2
Ammonia Acetate	A	A	-	A
Ammonia Bifluoride	-	A2	-	A
Ammonium Carbonate	B	B2	-	A
Ammonium Chloride	A	A2	A2	A
Ammonium Flouride 25%	A	-	-	A2
Ammonium Hydroxide	A	A1	D	A
Ammonium Glycolate	A	A	B	A

Reagent	HDPE	LDPE	PC	PP
Ammonium Nitrate	A	A1	-	A
Ammonium Oxalate	a	-	A1	A
Ammonium Persulfate	A	A2	-	A
Ammonium Phosphate, Dibasic	-	A2	A2	A
Ammonium Phosphate, Monobasic	-	A	-	A
Ammonium Phosphate, Tribasic	-	C	-	A
Ammonium Sulfate	A	A1	A2	A
Ammonium Sulfite	B	B2	-	A
Amyl Acetate	-	C1	D	B1
Amyl Alcohol	A	B2	B1	B1
Amyl Chloride	B	D	-	D
Aniline	B	C	D	A1
Aniline Hydrochloride	-	D	D	D
Antifreeze	-	-	-	D
Antimony Trichloride	B	B2	A2	A
Aqua Regia (80% HCL, 20% HNO3)	D	B1	D	B1
Arochlor 1248	-	C1	-	D
Aromatic Hydrocarbons	-	C	-	D
Arsenic Acid	B	B2	A1	A
Arsenic Salts	-	B	-	-
Barium Carbonate	-	B2	A2	A
Barium Chloride	B	A1	A	A
Barium Cyanide	-	B	-	D
Barium Hydroxide	-	B2	D	B
Barium Nitrate	-	B2	D	A
Barium Sulfate	B	B2	D	B1
Barium Sulfide	A	B2	-	B
Benzaldehyde	B	A1	D	D
Benzenamine	B	A	D	A
Benzene	D	D	D	D
Benzene Sulfonic Acid	A	A1	D	D
Benzoic Acid	A	A1	B1	B1
Benzol	-	C1	D	B
Benzyl Chloride	-	-	-	C1
Bleach	-	-	-	D
Bleaching liquors	-	A1	-	A1
Borax (Sodium Borate)	A	A2	-	B
Boric Acid	A	A2	-	A
Bromine	D	D	C1	D
Bromofone	D	D	D	D
Butadiene	D	D	D	C
Butane	-	C1	D	A1
Butanol (Butyl Alcohol)	-	B2	B1	A1
Butyl Amine	-	C1	D	B1
Butyl Ether	-	-	-	D
Butyl Phthalate	A	C1	D	B2

Reagent	HDPE	LDPE	PC	PP
Butyl Acetate	B	C1	D	B1
Butyric Acid	D	D	D	B1
Calcium Bisulfide	-	B1	-	A
Calcium Bisulfite	A	A1	D	A
Calcium Carbonate	-	B	C2	A
Calcium Chloride (30% in water)	A	B2	-	A2
Calcium Chloride (saturated)	A	-	-	A
Calcium Hydroxide 10%	A	-	-	A
Calcium Hydroxide (saturated)	A	-	-	A
Calcium Hydroxide	A	A2	D	A2
Calcium Hypochlorite 30%	A	-	-	A
Calcium Hypochlorite (saturated)	A	-	-	A
Calcium Nitrate	B	A1	A2	A2
Calcium Oxide	-	B1	-	A
Calcium Sulfate	-	B1	A2	A
Calcium Sulfide	-	-	-	A
Carbolic Acid (Phenol)	-	D	D	B
Carbon Bisulfide	-	-	-	D
Carbon Dioxide (dry)	-	A1	-	A2
Carbon Dioxide (wet)	-	A1	-	A2
Carbon Disulfide	D	D	D	D
Carbon Monoxide	-	A2	-	A
Carbon Tetrachloride	C	D	D	D
Carbon Tetrachloride (dry)	C	D	-	D
Carbon Tetrachloride (wet)	C	-	-	D
Carbonic Acid	B	B2	A1	A
Cellulose Acetate	-	-	-	A
Chloral Hydrate	D	-	-	D
Chlorine Water	C	B1	-	D
Chlorine Anhydrous Liquid	C	D	C	D
Chlorine (dry)	B	D	-	D
Chloroacetic Acid	A	D	D	C1
Chlorobenzene (Mono)	D	C1	D	C1
Chlorobromomethane	-	A	-	A
Chloroform	D	C1	D	C1
Chlorosulfonic Acid	D	D	C1	D
Chromic Acid 5%	A	A	B	D
Chromic Acid 10%	A	A	B	D
Chromic Acid 30%	A	A	C	D
Chromic Acid 50%	A	A	D	D
Citric Acid	A	D	A1	A
Citric Oils	B	-	-	A
Copper Chloride	-	-	-	A
Copper Cyanide	-	B2	D	A
Copper Nitrate	-	B2	D	A
Copper Sulfate 5%	A	A2	A1	A

CHEMICAL AND PHYSICAL PROPERTIES OF PLASTICS *CONTINUED*

Reagent	HDPE	LDPE	PC	PP
Copper Sulftate >55	A	A2	A1	A
Cresols	D	C1	D	D
Cresylic Acid	-	B1	D	A1
Cupric Acid	-	B1	A1	A2
Cyclohexane	D	B1	B	D
Cyclohexanon	B	D	D	D
Detergents	A	D	A1	A
Dextrin	A	-	-	A
Dextrose	A	-	-	A
Diacetone Alcohol	A	A	D	A1
Dichlorobenzane	-	-	D	C1
Dichloroethane	C	C1	D	D
Diesel Fuel	D	C1	A2	A1
Diethyl Ether	D	-	D	A1
Diethylamine	D	D	D	A1
Diethylene Glyol	A	B2	B1	A2
Dimethyl Aniline	B	-	D	D
Dimethyl Formamide	A	A	D	A
Diphenyl	-	-	-	D
Diphenyl Oxide	-	-	-	D
Disodium Phosphate	A	-	-	A
Epson Salts (Magnesium Sulfate)	-	A2	A1	A
Ethane	-	-	-	D
Ethanol	A	B	B2	A
Ethanolamine	-	-	-	D
Ether	D	D	-	D
Ethyl Acetate	A	A	D	A1
Ethyl Benzoate	B	C2	D	B1
Ethyl Chloride	C	C1	D	D
Ethyl Ether	D	D	-	D
Ethylene Bromide	-	D	D	D
Ethylene Chloride	C	D	D	C1
Ethylene Chlorohydrin	-	D	D	D
Ethylene Dichloride	D	D	D	D
Ethylene Glycol	A	A2	B1	A
Ethylene Oxide	B	A	C1	D
Fatty Acids	A	D	B1	A
Ferric Chloride	D	A1	A2	A
Ferric Nitrate	-	A2	A1	A
Ferric Sulfate	-	A2	A1	A
Ferrous Chloride	A	A2	D	A
Ferrous Sulfate	-	A2	A1	A
Fluboric Acid	A	A2	-	A
Flourine	D	D	C	D
Fluosilicic Acid	B	A2	A1	A
Formaldehyde 40%	A	D	A1	A
Formaldehyde 100%	A	B	A2	C

Reagent	HDPE	LDPE	PC	PP
Formic Acid	A	D	A1	A1
Freon 11	A	C	-	A
Freon 12	-	A1	-	A2
Freon 22	-	-	-	B
Freon 113	-	-	B1	D
Freon TF	B	-	-	D
Fuel Oils	C	B	B1	A
Furan Resin	-	D	-	D
Furfural	A	D	D	D
Gallic Acid	A	A	-	A
Gasoline (high-aromatic)	B	A	A	A
Gasoline , leaded, ref.	B	-	A2	B
Gasoline, unleaded	B	-	A2	C1
Gelatin	A	A2	-	A
Glucose	A	A2	A1	A
Glycerin	A	A1	A2	A
Glycolic Acid	-	A2	-	A
Heptane	B	B1	B	C2
Hexane	C	D	D	B1
Hydraulic Oil (Petro)	A	C	-	D
Hydraulic Oil (Synthetic)	A	A	-	D
Hydrazine	D	-	D	C
Hydrobromic Acid 20%	D	B2	-	A2
Hydrobromic Acid 100%	D	B1	-	C1
Hydrochloric Acid 20%	A	A2	B1	B2
Hydrochloric Acid 37%	A	B2	D	C
Hydrochloric Acid 100%	D	-	D	B1
Hydrochloric Acid, Dry Gas	D	A2	-	B
Hydrocyanic Acid	A	A2	-	A
Hydrocyanic Acid (Gas 10%)	A	-	B1	A
Hydrofluoric Acid 20%	A	A2	D	A2
Hydrofluoric Acid 50%	A	A1	D	A2
Hydrofluoric Acid 75%	B	C1	D	C1
Hydrofluoric Acid 100%	D	-	D	C1
Hydrofluosilicic Acid 20%	B	B2	-	A
Hydrofluosilicic Acid 100%	C	B1	-	A
Hydrogen Gas	A	A2	A2	A
Hydrogen Peroxide 10%	A	A	A2	A
Hydrogen Peroxide 30%	A	C2	A2	B1
Hydrogen Peroxide 50%	A	C2	A2	B1
Hydrogen Peroxide 100%	A	C2	A	B1
Hydrogen Sulfide (aqua)	A	A	A	A1
Hydrogen Sulfide (dry)	A	A	-	A1
Hydroquinone	-	A	-	A
Iodine	B	A1	-	C
Isooctane	B	B	B1	A2
Isopropyl Acetate	B	B1	D	B1

Reagent	HDPE	LDPE	PC	PP
Isopropyl Ether	D	B	D	B
Isotane	-	-	-	D
Kerosene	B	C1	D	B
Ketones	D	C1	D	C
Laquer Thinners	D	A	B	D
Laquers	D	A	D	D
Lactic Acid	A	A1	B	B
Latex	-	-	-	A2
Lead Acetate	A	A2	-	A1
Lead Nitrate	A	A2	-	A2
Lead Sulfamate	-	A1	A1	A2
Linoleic Acid	-	A	-	B1
Lithium Chloride	D	A2	B1	A2
Lye: KOH Potassium Hydroxide	B	A	D	A
Lye: NaOH Sodium Hydroxide	B	D	D	A
Lye: Ca(OH)2 Calcium Hydroxide	B	A2	D	A2
Magnesium Bisulfate	-	-	A1	A2
Magnesium Carbonate	-	B	A1	A
Magnesium Chloride	A	A1	A2	A2
Magnesium Hydroxide	B	A2	A1	A
Magnesium Nitrate	B	A2	A1	A
Magnesium Sulfate (Epson Salts)	A	A2	A1	A
Maleic Acid	A	B2	-	A
Maleic Anhydride	A	D	-	D
Malic Acid	-	B2	-	A1
Melamine	-	-	-	A
Mercuric Chloride (dilute)	A	A	A	B
Mercuric Cyanide	-	A	-	B
Mercurous Nitrate	-	A	A2	A
Mercury	A	A	D	B
Methane	-	-	-	A
Methanol (Methyl Alcohol)	A	A1	B1	A2
Methyl Acetate	C	B1	D	D
Methyl Acrylate	-	-	-	D
Methyl Alcohol 10%	A	A1	B1	A2
Methyl Bromide	-	C1	-	C
Methyl Butyl Ketone	-	-	D	D
Methyl Cellusolve	-	-	D	B
Methyl Chloride	-	C1	D	D
Methyl Dichloride	-	-	-	D
Methyl Ethyl Ketone	D	D	D	B2
Methyl Isobutyl Ketone	D	C	D	A
Methyl Methacrylate	-	-	-	D
Methylamine	-	A1	-	A2
Methylene Chloride	D	D	D	B1
Mineral Spirits	D	B	C	B

Reagent	HDPE	LDPE	PC	PP
Monoethanolamine	-	C	-	B
Morpholine	-	-	D	B2
Naphtha	-	A1	B	B
Naphthalene	B	C	-	B
Natural Gas	-	A	-	A
Nickel Chloride	B	A	A2	A
Nickel Nitrate	B	A	D	A2
Nickel Sulfate	B	A	A	A
Nitrating Acid (<1%)	-	-	-	C
Nitrating Acid (<15% H2SO4)	-	-	-	C
Nitrating Acid (>15% H2SO4)	-	-	-	C
Nitrating Acid (<15% HNO3)	-	-	-	C
Nitric Acid (5-10%)	A	B	A	A
Nitric Acid (20%)	B	C	B1	A2
Nitric Acid (50%)	D	B1	B	B
Nitric Acid (Concentrated)	D	C1	C1	D
Nitrobenzene	D	C1	D	B1
Nitromethane	D	A	D	B2
Nitrous Acid	-	-	-	A
Nitrous Oxide	-	C	-	D
Oleic Acid	C	C2	-	B1
Oleum 25%	-	D	-	D
Oleum 100%	-	D	-	D
Oxalic Acid (cold)	A	A2	-	A2
Ozone	A	C1	A1	B
Palmitic Acid	-	-	-	B1
Parafin	B	B	A1	A1
Pentane	-	D	A	D
Perchloric Acid	D	B	-	C
Perchloroethylene Acid	D	D	D	D
Petrolatum	-	B	-	D
Petroleum	D	C1	-	B1
Phenol (10%)	D	B	B1	B1
Phenol (Carbolic Acid)	D	D	D	B
Phosphoric Acid (<40%)	A	A	A	A2
Phosphoric Acid (>40%)	A	B1	A	A2
Phophoric Acid (crude)	B	B1	A	B2
Phosphoric Acid (molten)	D	-	-	D
Phosphoric Acid Anhydride	A	-	D	A
Phosphorus	-	B	-	A
Photographic Developer	-	A	A2	A
Photographic Solutions	A	A	A1	A2
Phthalic Acid	B	B2	-	A
Phthalic Anhydride	-	-	A1	D
Picric Acid	D	A	D	B1
Potash (Potassium Carbonate)	B	A1	-	A

CHEMICAL AND PHYSICAL PROPERTIES OF PLASTICS *CONTINUED*

Reagent	HDPE	LDPE	PC	PP
Potassium Bicarbonate	B	A	-	A
Potassium Bromide	B	A	A1	A
Potassium Chlorate	B	A1	A1	A
Potassium Chloride	A	A1	A	A
Potassium Chromate	-	A	-	A
Potassium Cyanide Solutions	-	A	-	A
Potassium Dichromate	B	A	A1	A
Potassium Ferricyanide	-	A2	-	A2
Potassium Ferrocyanide	-	A1	-	A
Potassium Hydroxide (Caustic Potato)	A	A	D	A
Potassium Iodite	B	B1	-	A2
Potassium Nitrate	B	A	A1	A
Potassium Permanganate	A	A	A2	A1
Potassium Sulfate	B	A2	A1	A
Potassium Sulfide	-	A2	-	A
Propane (liquefied)	D	C1	C1	A
Propylene Glycol	A	B2	B1	A2
Pyridine	D	B1	D	A2
Pyrogallic Acid	-	-	-	A
Salicylic Acid	-	B2	A1	A1
Silicone	-	-	A2	A
Silver Nitrate	A	A	A2	A1
Soap Solutions	B	D	A1	A
Soda Ash (see Sodium Carbonate)	A	B	A	A
Sodium Acetate	A	A	A1	A
Sodium Aluminate	-	-	-	-
Sodium Benzoate	B	A2	A2	A2
Sodium Bicarbonate	A	A2	A2	A
Sodium Bisulfate	B	A2	A1	A
Sodium Borate (Borax)	B	A2	A1	A2
Sodium Carbonate	A	B2	A2	A
Sodium Chlorate	-	B2	A1	A
Sodium Chloride	A	A2	A2	A
Sodium Cyanide	B	A2	-	A
Sodium Ferrocyanide	-	A	-	A
Sodium Fluoride	-	A2	-	A
Sodium Hydroxide (20%)	C	B	A2	A
Sodium Hydroxide (50%)	C	B	D	A
Sodium Hydroxide (80%)	C	-	D	A
Sodium Hypochlorite (100%)	C	B2	-	B
Sodium Hypochlorite (<20%)	A	A	C	A
Sodium Metaphosphate	B	A1	-	A1
Sodium Metasilicate	-	-	-	A
Sodium Nitrate	B	A2	-	A
Sodium Perborate	-	A1	-	A
Sodium Peroxyde	B	A	A2	B

Reagent	HDPE	LDPE	PC	PP
Sodium Polyphosphate	B	A	-	A
Sodium Silicate	A	A2	-	A
Sodium Sulfate	-	A2	A2	A
Sodium Sulfide	B	A2	D	A
Sodium Sulfite	B	B1	-	A2
Sodium Thiosulfate	-	A1	D	A2
Stannic Chloride	-	A2	A1	A
Stannous Chloride	-	B2	-	A
Stearic Acid	A	B1	A1	A2
Stoddard Solvent	-	C2	A2	C
Sulfate (Liquors)	A	A2	-	A
Sulfur Chloride	-	C1	-	C1
Sulfur Dioxide	D	B1	-	A1
Sulfur Dioxide (dry)	A	A1	A1	A1
Sulfur Hexafluoride	-	B	-	-
Sulfur Trioxide	-	-	-	C
Sulfur Trioxide (dry)	-	C1	-	D
Sulfuric Acid (<10%)	A	A1	A1	A2
Sulfuric Acid (10 - 75%)	A	A1	B1	A1
Sulfuric Acid (75 - 100%)	B	C	D	C1
Sulfuric Acid (cold concentrated)	B	D	-	A2
Sulfuric Acid (hot concentrated)	B	D	D	D
Sulfurous Acid	B	B2	-	A
Tannic Acid	A	B2	C	A
Tartaric Acid	A	A1	-	A
Tetrachloroethane	-	-	-	C
Tetrachloroethylene	C	B	D	D
Tetrahydrofuran	C	C1	D	C2
Tin Salts	-	-	-	A
Toluene	D	C1	D	C1
Trichloroacetic Acid	C	A	D	A
Trichlorethane	D	-	D	C
Trichloroethylene	D	D	-	C1
Tricresylphophate	-	B1	-	A1
Triethlamine	-	-	-	D
Trisodium Phosphate	A	A	-	A
Turpentine	B	D	D	D
Urea	A	A	D	A
Urine	A	A2	-	A
Vinegar	A	A	A2	A
Vinyl Acetate	D	A	-	B1
Water, Deionized	A	-	-	A2
Water, Distilled	A	A2	A2	A
Water, Salt	A	A2	A2	A
Xylene	D	B	D	B
Zinc Chloride	A	A1	A2	A
Zinc Sulfate	A	A2	A2	A