Monomers Product Guide

Acid Containing Monomers
Acrylic Monomers
Adhesion Promoting Monomers
Amine Containing Monomers
Crosslinking Acrylic Monomers
Dual Reactive Acrylic Monomers
Epoxides / Anhydrides / Imides
Fluorescent Acrylic Monomers
Fluorinated Acrylic Monomers
High / Low Refractive Index Monomers
Hydroxy Containing Monomers
Mono & Difunctional Glycol Oligomeric Monomers
Styrenic Monomers
Sulfonate Containing Monomers
UV Light Active Monomers
Vinyl & Ethenyl Monomers
Polymerization Inhibitors for Monomers

Polysciences, Inc.
Chemistry beyond the ordinary

Monomers

Polysciences stocks a wide portfolio of monomers. Such variety offers the synthetic chemist the tools to make a rich array of polymer compositions. Our Monomers Selection Guide organizes this set of reactive monomers into various groupings. These organized sets of data will enable the scientist to quickly determine which specific monomer can be used to synthesize custom polymers that meet their needs. In reviewing the data in these selection guides, you will be able to compare and contrast monomer alternatives quickly. More detailed information and chemical structures are included in the alphabetical listing which follows.

Monomer Selection Guide At-A-Glance

Acid Containing Monomers

Acidic groups are often used to convey solubility to polymers in aqueous media. These moieties can be converted to a wide range of alternative functional groups. Acid groups can be utilized as catalysts for chemical reactions. Additionally they are employed in polymers as a functional group which enables improved adhesion to a variety of substrates through hydrogen bonding or metal chelation.

	Polymerizable Sites	Polymerization Synthon	Form of Acid	Special Features	Catalog #	Size
Acrylic acid min. 99.5%	mono	acrylic	carboxylic acid	makes water soluble polymers	00020-250	250 g
Acrylic anhydride min. 90%	mono	acrylic	carboxylic acid (protected)	not a crosslinker	00488-50	50 g
tert-Butyl methacrylate	mono	acrylic	carboxylic acid (protected)	acid formed by thermal elimination of isobutylene, homopolymer Tg = 230° C	02058-100	100 g
Beta-Carboxyethyl acrylate, >98% Active	mono	acrylic	carboxylic acid	high purity, hydrophilic	24891-100	100 g
Methacrylic acid, 99.9%	mono	acrylic	carboxylic acid	high purity, hydrophilic	24897-250	250 g
Methacrylic acid, min. 99.5%	mono	acrylic	carboxylic acid	offers latex stability, homopolymer Tg =185° C	00212-450	450 g
4-Methacryloxyethyl trimellitic anhydride	mono	acrylic	anhydride	adhesion promoter through anhydride	17285-10	10 g
Methacryloyl-L-Lysine	mono	acrylic	amino acid	zwitterionic, can derivatize acid or amine	24315-5	5 g
o-Nitrobenzyl methacrylate, min. 95%	mono	acrylic	carboxylic acid (protected)	acid formed by photolabile deprotection	24360-10	10 g
2-Propene-1-sulfonic acid, sodium salt, 35% soln. in water	mono	vinyl	sulfonic acid salt	water soluble	00064-10	10 g
2-Sulfoethyl methacrylate, >90%	mono	acrylic	sulfonic acid ester	water soluble	02597-50	50 g
Trichloroacrylic acid	mono	acrylic	carboxylic acid	carboxylic acid	02686-10	10 g
4-Vinylbenzoic acid	mono	styrenic	carboxylic acid	aromatic acid	04485-5	5 g

Acid Containing Monomers, Metal Salts

	Polymerizable Sites	Polymerization Synthon	Form of Acid	Special Features		
Barium methacrylate, >95%	dual	acrylic	metal salt	metal salt	01994-50	50 g
Lead methacrylate 2-ethylhexanoate in methyl methacrylate (0.54/0.46 moles)	mono	acrylic	heavy metal salt	x-ray opacity and capture	16382-100	100 g
Lithium methacrylate	mono	acrylic	metal salt	water soluble	17117-50	50 g
Magnesium acrylate	dual	acrylic	metal salt	ionomeric crosslinking, high Tg polymers	02467-10	10 g
Sodium acrylate	mono	acrylic	metal salt	can make high Tg salt polymers	01207-50	50 g
3-Sulfopropyl acrylate, potassium salt	mono	acrylic	sulfonic acid salt	water soluble	17209-100	100 g
3-Sulfopropyl methacrylate, potassium salt, 98%	mono	acrylic	sulfonic acid salt	water soluble	17210-100	100 g
Zinc (di)methacrylate	dual	acrylic	metal salt	ionomeric crosslinking	03011-100	100 g

Acrylic Monomers (Neutral, Monofunctional)

Monofunctional acrylics shape the type and nature of the main chain polymer backbone. Monomers are chosen to obtain the desired glass transition temperature, flexibility, mechanical strength, polarity and hydrophilic/hydrophobic character of the resulting polymer. Generally, acrylamides exhibit improved resistance to hydrolysis compared to acrylic/methacrylic esters.

	Homopolymer Tg (°C)	Special Features	Catalog #	Size
Acrylamide, Chemzymes Ultra Pure®	165	hydrophilic, hydrogel synthesis	00019-100	100 g
N-Acryloylmorpholine	147	hydrophilic	21192-50	50 g
Benzhydryl methacrylate		high refractive index, aromatic	24286-10	10 g
Benzyl acrylate, ~99%	6	high refractive index, aromatic	01997-100	100 g
Benzyl methacrylate, min. 95%	54	high refractive index, aromatic	02000-100	100 g
N-Benzylmethacrylamide		high refractive index, aromatic	17969-25	25 g
2-n-Butoxyethyl methacrylate, ~97%		moderate polarity	02034-100	100 g
tert-Butyl acrylate	43	hydrocarbon building block monomer	02039-250	250 g
sec-Butyl acrylate	12	hydrocarbon building block monomer	02038-25	25 g
n-Butyl acrylate, min. 99%	-54	hydrocarbon building block monomer	02037-500	500 g
sec-Butyl methacrylate	60	hydrocarbon building block monomer	02057-10	10 g
n-Butyl methacrylate	20	hydrocarbon building block monomer	02059-500	500 g
iso-Butyl methacrylate	53	hydrocarbon building block monomer	02056-500	500 g
tert-Butyl methacrylate	107	hydrophobic / protected acid	02058-100	100 g
4-Chlorophenyl acrylate	58	high refractive index, aromatic	01331-10	10 g
Cyclohexyl acrylate, min 85%	19	aliphatic, hydrophobic	02109-100	100 g
Cyclohexyl methacrylate, ~98%	83	aliphatic, hydrophobic	01837-100	100 g
iso-Decyl acrylate	-55	hydrophobic, low Tg	03008-100	100 g
n-Decyl methacrylate, 99%	-30	hydrophobic	23344-25	25 g
iso-Decyl methacrylate, min. 90%		hydrophobic	22493-100	100 g
N,N-Diethylacrylamide, min. 95%		polar building block	00871-25	25 g
N,N-Dimethylacrylamide, min. 98%	89	useful for chromatographic resins	02255-100	100 g
N,N-Dimethylmethacrylamide		hydrolytic stability, useful for hydrogels	02270-25	25 g
N-Diphenylmethylacrylamide		aromatic	19663-5	5 g
n-Dodecyl acrylate	-3	hydrophobic, long chain alkyl	02460-50	50 g
n-Dodecyl methacrylate	-55	hydrophobic. Low Tg , long chain alkyl	02461-250	250 g
N-Dodecylmethacrylamide	15	hydrophobic, hydrolytic stability	04135-10	10 g
2-(2-Ethoxyethoxy)ethyl acrylate	-70		02626-100	100 g
2-Ethylhexyl acrylate	-50	hydrophobic	00587-250	250 g
N-Ethylmethacrylamide		hydrolytic stability, useful for hydrogels	02322-10	10 g
1-Hexadecyl methacrylate	22	hydrophobic, aliphatic	02396-25	25 g
n-Hexyl acrylate, min. 98%	-45	hydrophobic, aliphatic	02411-100	100 g
2-Methoxyethyl acrylate	-50	low Tg monomer	02487-100	100 g
2-Methoxyethyl methacrylate, min.85%	16	moderate polarity	02488-100	100 g
Methyl Methacrylate, min 99.5%	105	versatile building block monomer	00834-1	1 liter
2-Naphthyl acrylate	24	fluorescent, hydrophobic, aromatic	06024-1	1 g
N-(n-Octadecyl)acrylamide		hydrophobic	04673-10	10 g
n-Octyl methacrylate	-20	hydrophobic	23355-25	25 g
N-tert-Octylacrylamide		hydrophobic, hydrolytic stability	03141-25	25 g
Neopentyl methacrylate		hydrophobic	06127-10	10 g
Pentabromophenyl acrylate		brominated, high RI, flame retardant	06344-10	10 g
Pentabromophenyl methacrylate		brominated, high RI, flame retardant	04253-5	5 g
Pentafluorophenyl acrylate		perfluorophenyl, low surface energy	06349-5	5 g
Pentafluorophenyl methacrylate, 95%		perfluorophenyl, low surface energy	06350-5	5 g

	Homopolymer Tg (°C)	Special Features	Catalog #	Size
2-Phenoxyethyl methacrylate	54	aromatic, hydrophobic	02640-100	100 g
Phenyl acrylate, min. 95%	57	aromatic, UV absorbing	02642-10	10 g
Phenyl methacrylate , >95%	110	moderate UV absorbing, aromatic, hydrophobic	02644-10	10 g
2-Phenylethyl acrylate, min. 92%	-3	moderate UV absorbing, aromatic, hydrophobic	02834-100	100 g
2-Phenylethyl methacrylate, min. 92%	26	moderate UV absorbing, aromatic, hydrophobic	02911-100	100 g
n-Propyl acrylate	-37	building block monomer	03132-25	25 g
n-Propyl methacrylate	35	building block monomer	03174-100	100 g
N-iso-Propylacrylamide	85	hydrophilic	02455-100	100 g
Stearyl acrylate	35	hydrophobic, can form crystal domains	02636-100	100 g
Stearyl methacrylate	38		02637-100	100 g
Tetrahydrofurfuryl acrylate	-12		02907-250	250 g
Tribromoneopentyl methacrylate		bromo non-aromatic	03057-10	10 g
2,4,6-Tribromophenyl acrylate		bromo aromatic, high RI	03330-10	10 g
Triethylene glycol monomethyl ether monomethacrylate		hydrophilic	18556-500	500 g
3,3,5-Trimethylcyclohexyl methacrylate		aliphatic, bulky	02660-100	100 g
Undecyl methacrylate		hydrophobic	02544-25	25 g

Adhesion Promoting Monomers

Functional groups known to increase adhesion of polymers to surfaces include phosphate and carboxylic acids (metal adhesion) and silyl ethers (glass/silaceous adhesion) which hydrolyze to give reactive Si-OH bonds. While these monomers are well studied examples, many monomers having functional groups such as acids, amines and hydroxyls can also impart polymer adhesion to various substrates. Please refer to other tables for a more expansive listing of these monomers. Also see Amine Monomer section.

	Polymerizable Sites	Polymerization Synthon	Add'l Reactive Functionality	Special Features		
Acrylic acid min. 99.5%	mono	acrylic	carboxylic acid	acid provides metal adhesion	00020-250	250 g
Bis(2-methacryloxyethyl) phosphate	dual	acrylic	phosphate	crosslinking monomer with adhesion promoting capabilities, good for metals	16041-10	10 g
4-Methacryloxyethyl trimellitic anhydride	mono	acrylic	anhydride	hydrolyzed acid offers improved adhesion	17285-10	10 g
3-Methacryloxypropyltrimethoxysilane	mono	acrylic	silyl ether	ethers react with silaceous surfaces to improve adhesion, glass pretreatment for polyacrylamide gels	02476-250	250 g
Monoacryloxyethyl phosphate	mono	acrylic	phosphate	used for introducing phosphorus into polymers, adhesion promoter	22468-10	10 g
Vinyltriethoxysilane	mono	vinyl	silyl ether	reactive silyl ethers hydrolyze affording bonding sites to silaceous surfaces	04537-50	50 g

Amine Containing Monomers

Amines are among the most widely versatile functional groups. In biopolymers, amines are the key synthetic handle to build structure and architecture to a polymer. Amine groups can act as base catalysts, can be quaternized to yield aqueous soluble polymers and can function as ligands to a variety of metals. Amines are good nucleophiles and can be converted to a wide set of functional groups. Amines can form salts with carboxylic and phosphoric acids to form biologically interesting complexes and structures.

	Polymerizable Sites	Polymerization Synthon	Add'l. Reactive Functionality	Special Features	Catalog #	Size
2-Acryloxyethyltrimethylammonium chloride	mono	acrylic	quaternary, HCl salt		17981-250	250 g
2-Aminoethyl methacrylate hydrochloride, min. 95%	mono	acrylic	primary, HCl salt		21002-10	10 g
N-(2-aminoethyl) methacrylamide hydrochloride	mono	acrylic	secondary, HCl salt		24833-5	5 g
N-(t-BOC-aminopropyl) methacrylamide	mono	acrylic	primary (protected)	solvent soluble, for primary amine polymers	24318-10	10 g
N-(3-Aminopropyl)methacrylamide hydrochloride, >98%	mono	acrylic	primary, HCl salt		21200-5	5 g
2-(tert-Butylamino)ethyl methacrylate, min. 90%	mono	acrylic	secondary	homopolymer Tg = 33° C	01797-100	100 g
Diallylamine, min. 98%	dual	vinyl	secondary	forms cyclopolymers	21424-100	100 g
Diallyldimethylammonium chloride, 65% soln. in water	dual	vinyl	quat	cationic polymers via cyclopolymerization	15912-100	100 g
2-(N,N-Diethylamino)ethyl methacrylate	mono	acrylic	tertiary	homopolymer Tg = 20° C	01872-500	500 g
2-(Diethylamino)ethylstyrene, mixed m,p-isomers, min. 95%	mono	vinyl	tertiary		24100-5	5 g
2-Diisopropylaminoethyl methacrylate	mono	acrylic	tertiary		24263-10	10 g
2-(N,N-Dimethylamino)ethyl acrylate	mono	acrylic	tertiary		02257-500	500 g
N-[2-(N,N-Dimethylamino)ethyl] methacrylamide	mono	acrylic	tertiary	hydrolytic stability	06172-5	5 g
N-[3-(N,N-Dimethylamino)propyl] acrylamide, min.95%	mono	acrylic	tertiary	homopolymer Tg = 19° C	22018-10	10 g
N-[3-(N,N-Dimethylamino)propyl] methacrylamide	mono	acrylic	tertiary	hydrolytic stability	09656-100	100 g
3-Dimethylaminoneopentyl acrylate	mono	acrylic	tertiary		17970-10	10 g
2-(N,N-Dimethylamino)ethyl methacrylate, min. 99%	mono	acrylic	tertiary	homopolymer Tg = 19° C	00213-500	500 g
Methacryloyl-L-Lysine	mono	acrylic	amino acid	zwitterionic, multifunctional, water soluble	24315-5	5 g
2-N-Morpholinoethyl acrylate, 95%	mono	acrylic	tertiary		17977-100	100 g
2-N-Morpholinoethyl methacrylate, 95%	mono	acrylic	tertiary		17978-100	100 g

Crosslinking Acrylic Monomers - Difunctional

Difunctional monomers are useful for imparting crosslinking or branching sites to polymer architectures. The "spacer" group between the acrylic end groups often helps determine the physical and mechanical attributes of the resulting crosslinked polymer structure. Acrylic moieties are generally more reactive than methacrylic moieties and are thus used when faster reaction kinetics are desired (e.g. UV curable systems.)

	Add'l. Reactive Functionality	Special Features	Catalog #	Size
1-(Acryloyloxy)-3-(Methacryloyloxy)-2-Propanol	hydroxyl		25351-50	50 ml
Barium methacrylate, >95%	carboxylic acid	divalent metal atom salt	01994-50	50 g
2,2-Bis[4-(2-acryloxyethoxy)phenyl]propane	rigid hydrophibic, crosslinker	rigid, aromatic	04136-25	25 g
2,2-Bis[4-(2-hydroxy-3-methacryloxypropoxy)phenyl]propane		rigid, aromatic	03344-100	100 g
Bis(2-methacryloxyethyl) N,N'-1,9-nonylene biscarbamate		flexible, hydrophobic	21619-50	50 g
Bis(2-methacryloxyethyl) phosphate	phosphate	adhesion promoter	16041-10	10 g
2,2-Bis(4-methacryloxyphenyl)propane		rigid, hydrophobic	01381-25	25 g
1,4-Butanediol diacrylate, min. 85%		aliphatic	02049-100	100 g
1,3-Butanediol dimethacrylate, 98%		aliphatic	02047-500	500 g
1,4-Butanediol dimethacrylate, min. 90%		aliphatic	05973-250	250 g
Copper (II) methacrylate	carboxylic acid	divalent metal atom salt	21222-25	25 g
trans-1,4-Cyclohexanediol dimethacrylate		rigid, aliphatic	18912-10	10 g
N,N'-Cystaminebisacrylamide, Electro Pure™	disulfide	reversible crosslinking	09809-5	5 g
1,10-Decanediol dimethacrylate		flexible, aliphatic, long chain	02140-25	25 g
1,4-Diacryloylpiperazine		rigid	21190-10	10 g
N,N-Diallylacrylamide	acrylic		01848-10	10 g
Diethylene glycol diacrylate		hydrophilic	02215-100	100 g
Diethylene glycol dimethacrylate		hydrophilic	02214-100	100 g
2,2-Dimethylpropanediol dimethacrylate		aliphatic	02276-100	100 g
N, N' Ethylene Bisacrylamide		hydrogel crossslinker	09811-1	1 g
Ethylene glycol diacrylate		UV curable, acrylate	02302-25	25 g
Ethylene glycol dimethacrylate, 99.7%		hydrophilic, high purity	24896-250	250 g
Ethylene glycol dimethacrylate, min 88%		hydrophilic	02303-250	250 g
Ethylene glycol dimethacrylate, min 98%		hydrophilic	24030-250	250 g
Fluorescein dimethacrylate		fluorescent	23589-100	100 mg
N,N'-Hexamethylenebisacrylamide		hydrolytic stability	01495-5	5 g
1,6-Hexanediol diacrylate		aliphatic	23671-100	100 g
1,6-Hexanediol dimethacrylate, min 98%		aliphatic	23672-100	100 g
2,2-Bis[4-(2-hydroxy-3-methacryloxypropoxy)phenyl]propane		rigid, aromatic	03344-500	500 g
Lead acrylate			02968-100	100 g
Magnesium acrylate	carboxylic acid	divalent metal atom salt	02467-10	10 g
N,N'-Methylenebisacrylamide, Chemzymes®; Ultra Pure, Purity >99%		hydrogel crosslinker	00719-100	100 g
1,9-Nonanediol dimethacrylate		flexible, aliphatic	00801-10	10 g
1,5-Pentanediol dimethacrylate		aliphatic	04260-25	25 g
1,4-Phenylene diacrylate		rigid, aromatic	06389-10	10 g
Tetraethylene glycol dimethacrylate		aliphatic	02654-50	50 g
Tricyclodecane dimethanol diacrylate			25110-50	50 g
Triethylene glycol diacrylate		UV curable, acrylate > methacrylate	02655-250	250 g
Triethylene glycol dimethacrylate			01319-250	250 g
Triethylene glycol dimethacrylate, min 95%		aliphatic	24034-100	100 g
Zinc (di)methacrylate	carboxylic acid	ionomeric crosslinker	03011-100	100 g

Crosslinking Acrylic Monomers - Multifunctional

Typically used for generating highly crosslinked polymer structures, these monomers increase polymer toughness, modulus and solvent resistance. For UV curable formulations, multifuntional acrylates are typically faster reacting than their methacrylate analogs.

	Polymerizable Sites	Add'l. Reactive Functionality	Special Features	Catalog #	Size
Dipentaerythritol pentaacrylate (mixture of tetra-, penta-, hexaacrylate)	multiple		high crosslinking efficiency	16311-500	500 g
Pentaerythritol tetraacrylate	multiple			01547-100	100 g
Pentaerythritol triacrylate	tri	hydroxyl	multifunctional crosslinker	04259-100	100 g
1,1,1-Trimethylolpropane triacrylate	tri		useful for UV cure	02658-250	250 g
1,1,1-Trimethylolpropane trimethacrylate	tri		useful for UV cure	02659-250	250 g

Dual Reactive Acrylic Monomers

It is often desirable to synthesize polymer architectures that are capable of further reaction to incorporate new functionality, graft new polymer chains, attach drugs or biomolecules, or make the polymer respond intelligently to changes in its environment. This diverse set of monomers have easily polymerizable carbon-carbon double bonds yet contain a secondary reactive group that can be elaborated in a multitude of ways. Some reactive groups e.g., carboxylic acid in o-nitrobenzyl methacrylate *(Cat. #24360)* are masked and are revealed by simple deprotection schemes.

	Add'l. Reactive Functionality	Special Features	Catalog #	Size
Acrylic anhydride min. 90%	anhydride (protected)	allows formation of cyclic anhydrides	00488-50	50 g
4-(2-Acryloxyethoxy)-2-hydroxybenzophenone	phenol	benzophenone is a strong UV absorber, potential UV radical initiator	19931-10	10 g
N-Acryloxysuccinimide	ester (protected)	derivitization through ester link using mild reaction conditions, good for biologically active compounds	19930-1	1 g
Allyl methacrylate	olefin	allyl double bond is less reactive than methacrylate, good for post polymerization reactions	01643-500	500 g
2-Aminoethyl methacrylate hydrochloride, min. 95%	amine (as HCl salt)	can be used to prepare polymers with amine functionality	21002-10	10 g
N-(t-BOC-aminopropyl)methacrylamide	amine (protected)	t-BOC easily deprotected to yield primary amine	24318-10	10 g
N-(3-Aminopropyl)methacrylamide hydrochloride, >98%	amine (as HCl salt)	can be used to prepare polymers with amine functionality	21200-5	5 g
2-Bromoethyl acrylate, min. 95%	halogen	allows synthesis of heavy atom polymers, Br can be displaced with various nucleophiles	02015-10	10 g
N-(iso-Butoxymethyl)methacrylamide, min. 95%	oxo-methylene	acid + heat catalyzed crosslinking monomer	19221-100	100 g
tert-Butyl acrylate	carboxylic acid (protected)	used in photoresist formulations	02039-250	250 g
2-(tert-Butylamino)ethyl methacrylate, min. 90%	amine (secondary)	builds polymers with secondary amines, potential H-Bonding sites	01797-100	100 g
2-Carboxyethyl acrylate, 90%	carboxylic acid	lower volatility analog to acrylic acid	16719-100	100 g
2-Cinnamoyloxyethyl acrylate	α, β unsat. ester	photocrosslinking monomer	24014-10	10 g
Cinnamyl methacrylate	functionalized styrene	photocrosslinking monomer	02092-5	5 g
2-Cyanoethyl acrylate	nitrile	polar building block monomer, can use nitrile for functionalization	01829-100	100 g
N,N-Diallylacrylamide	allyl	crosslinking monomer	01848-10	10 g
Dicyclopentenyloxyethyl acrylate	ethenyl	endo cyclic olefin does not readily polymerize, can be post reacted e.g. oxidative crosslinking	15797-25	25 g
Glycerol monomethacrylate, mixture of isomers	hydroxyl	isomer mixture, useful in hydrogel preparation,-OH can be functionalized in multiple ways	04180-25	25 g

	Add'l. Reactive Functionality	Special Features	Catalog #	Size
Glycidyl methacrylate	epoxide	versatile, introduces reactive sites into polymers, can be derivatized in post polymerization reactions with various nucleophiles	02607-500	500 g
2-Hydroxyethyl acrylate	hydroxyl	hydrophilic monomer building block	01902-250	250 g
Hydroxypropyl methacrylate, mixture of isomers	hydroxyl	hydrophilic monomer building block, can be post reacted through hydroxyl	00730-500	500 g
N-(2-Hydroxypropyl)methacrylamide	hydroxyl	hydrophilic monomer building block, can be post reacted through hydroxyl group	08242-10	10 g
3-Methacryloxypropyltrimethoxysilane	silyl ether	ethers react with glass surfaces to improve adhesion, glass pretreatment for polyacrylamide gels	02476-250	250 g
Methacryloyl chloride, min. 80%	halogen	reactive building block monomer. Also used to prepare other specialty monomers	01518-50	50 g
Methacryloyl fluoride	halogen	reactive building block monomer. Also used to prepare other specialty monomers	17414-25	25 g
Methyl 2-cyanoacrylate	cyano	used in rapidly setting cements and adhesives	01520-10	10 g
N-Methylolacrylamide, 48% soln. in water		acid catalyzed post polymerization crosslinking capabilities	02518-250	250 g
Monoacryloxyethyl phosphate	phosphate	used for introducing phosphorus into polymers, adhesion promoter	22468-10	10 g
o-Nitrobenzyl methacrylate, min. 95%	carboxylic acid (protected)	nitrobenzyl ester removed by UV irradiation to afford carboxylic acid, used for catalysis, photoresists, latent reactive acid	24360-10	10 g
N-(Phthalimidomethyl)acrylamide	active methylene	used in photoresist formulations	19390-25	25 g
Propargyl acrylate	acetylenic	acetylenic group can be post functionalized, possible oxidative crosslinking monomer	02964-25	25 g
Propargyl methacrylate	acetylenic	acetylenic group can be post functionalized, possible oxidative crosslinking monomer	02965-25	25 g
Tricyclodecane dimethanol diacrylate			25110-50	50 g

Epoxides / Anhydrides / Imides

Unlike ethylenic monomers which polymerize through free radical processes, epoxide resins react with amines, carboxylic acids, anhydrides, etc. to form polymers displaying a range of characteristics from tough and durable to soft and adhesive.

	Polymerizable Sites	Special Features		
Allyl glycidyl ether	mono	can react either epoxide or allyl group into polymers	19191-50	50 g
4,4'-Bisphenol A Bis-(N-Methylphthalimide)	dual	useful monomer for synthesis of high temp. polymers	24284-25	25 g
4,4'-Bisphenol A Dianhydride	dual	useful monomer for synthesis of high temp. polymers	24283-25	25 g
1,4-Butanediol diglycidyl ether	dual	can be used for post polymerization crosslinking of amine polymers	01795-50	50 g
Citraconic anhydride	mono	reversible protection of amino groups in protein synthesis	01824-100	100 g
Glycidyl butyl ether	mono	used in epoxy reactions as monofunctional diluent	05678-500	500 g
Glycidyl cinnamate	mono	polymerizable with various carboxylic acids, alcohols and amines; Olefin moiety can be photocrosslinked	16090-10	10 g
Glycidyl Glycerol-Ether, Polyfunctional	multiple	isomer mixture, efficient crosslinking monomer for various nucleophilic agents	09221-50	50 g

	Polymerizable Sites	Special Features	Catalog #	Size
Glycidyl nonylphenyl ether	mono	epoxy functional	18236-100	100 g
Methacrylic anhydride		uncrosslinked	01517-100	100 ml
Ethylene glycol diglycidyl ether (Quetol 651)	dual	active crosslinking monomer for active nucelophiles, hydrophilic, used for hydrogels	01479-100	100 g
Propylene Oxide, EM Grade	mono	basic bulding block monomer for water dispersible polymers	00236-1	1 pint
Propylene glycol diglycidyl ether	dual	versatile crosslinker for amine, hydroxyl and carboxylate systems	24044-100	100 g
Triglycidyl isocyanurate	tri	crosslinking monomer for epoxy, urethane systems	16173-50	50 g

Fluorescent Acrylic Monomers

Monomers with fluorescent tags are often used to build polymers that can be detected at very low concentrations using fluorescence spectroscopy. Polymer migration and diffusion has been studied using fluorescent tags. Polymer microspheres containing fluorescent groups are used routinely for flow cytometry and medical diagnostic assays.

	Monomer Type	Special Features		
9-Anthracenylmethyl methacrylate	neutral	Ex. max = 362 nm, Em. max = 407 nm, yellow crystals	23587-100	100 mg
	neutral	Ex. max = 362 nm, Em. max = 407 nm, yellow crystals	23587-1	1 g
3,8-dimethacryloyl ethidium bromide	ionic	Ex. max = 439 nm, Em. max = 512 nm, insoluble in water	23590-100	100 mg
Fluorescein dimethacrylate	neutral	Ex. max = 470 nm, Em. = 511 nm	23589-100	100 mg
Methacryloxyethyl thiocarbamoyl rhodamine B	ionic, mixture isomers	Ex. max = 548 nm, Em. max = 570 nm, purple crystals	23591-100	100 mg
2-Naphthyl acrylate	neutral	hydrophobic, fluorescent monomer	06024-1	1 g
2-Naphthyl methacrylate	neutral	Ex. max = 285 nm, Em. min = 345 nm	23602-100	100 mg
Nile Blue Acrylamide		dark blue crystals; Em. Max. 674 nm in H_2O	25395-100	100 mg
Nile Blue Methacrylamide		dark purple crystals; Em. Max. 674 nm in H_2O	25355-100	100 mg
O-Methacryloyl Hoechst 33258	neutral	Ex. max = 355 nm , Em. max = 497 nm, off-white crystals	23592-100	100 mg
1-Pyrenylmethyl methacrylate	neutral	Ex. max = 339 nm, Em. min = 394 nm, pale yellow crystals	23588-100	100 mg

Fluorinated Acrylic Monomers

Monomers containing fluorine provide polymers with unique low energy surfaces. Materials made from these monomers are typically chemical resistant and very hydrophobic.

	Homopolymer Tg (°C)	Catalog #	Size
Bis-(2,2,2-Trifluoroethyl) Itaconate		24972-25	25 g
Bis-(1,1,1,3,3,3-Hexafluoroisopropyl) Itaconate		24971-25	25 g
1H,1H,7H-Dodecafluoroheptyl methacrylate	13	00767-25	25 g
1H,1H,2H,2H-Heptadecafluorodecyl acrylate	0	19227-100	100 g
1H,1H,2H,2H-Heptadecafluorodecyl methacrylate	40	19226-25	25 g
1H,1H-Heptafluorobutyl acrylate	-30	21039-25	25 g
Hexafluoro-iso-propyl methacrylate		02401-10	10 g
1H,1H,3H-Hexafluorobutyl acrylate	-22	05631-10	10 g
1H,1H,3H-Hexafluorobutyl methacrylate		05632-10	10 g
1,1,1,3,3,3-Hexafluoroisopropyl Acrylate		24970-25	25 g
1H,1H,5H-Octafluoropentyl acrylate	-35	21044-25	25 g
1H,1H,5H-Octafluoropentyl methacrylate, min. 98%	36	21045-25	25 g
Pentafluorophenyl acrylate		06349-5	5 g
Pentafluorophenyl methacrylate, 95%		06350-5	5 g
1H,1H,3H-Tetrafluoropropyl methacrylate		07577-25	25 g
2,2,2-Trifluoroethyl acrylate	-10	01718-25	25 g
2,2,2-Trifluoroethyl methacrylate	80	02622-25	25 g

High/Low Refractive Index Monomers

Polymers that interact with light can be modified by optimizing their refractive index properties. These materials are useful in many types of optical applications: lenses, optical switches, optical fiber coatings, etc. Low RI monomers are typically highly fluorinated. Polymers using perfluorinated monomers are often hydrophobic and exhibit very low surface energies.

	Polymerizable Sites	Homopolymer Tg (°C)	Special Features		
Allyl Phenyl Ether, 98%	vinyl		hydrophobic, high RI (ca 1.52)	24894-100	100 g
Benzyl acrylate, ~99%	acrylic	6	high RI (ca 1.55), non-halogenated	01997-100	100 g
Benzyl methacrylate, min. 95%	acrylic	54	high RI (ca 1.57), non-halogenated	02000-100	100 g
N-Benzylmethacrylamide	acrylic		high RI (ca 1.60), non-halogenated	17969-25	25 g
2-(9H-Carbazole-9-yl) ethyl methacrylate	acrylic		high RI (ca 1.69)	24372-1	1 g
4-Chlorophenyl acrylate	acrylic	58	high RI (ca 1.55), chlorinated aromatic	01331-10	10 g
3-Chlorostyrene, 98%		90	high RI (ca 1.57)	02042-5	5 g
1H,1H,7H-Dodecafluoroheptyl methacrylate	acrylic	13	low RI (ca 1.36), fluorinated aliphatic	00767-25	25 g
1H,1H,2H,2H-Heptadecafluorodecyl acrylate	acrylic	0	low RI (ca 1.34), fluorinated	19227-25	25 g
1H,1H,2H,2H-Heptadecafluorodecyl methacrylate	acrylic	40	low RI (ca 1.35), fluorinated	19226-25	25 g
1H,1H-Heptafluorobutyl acrylate	acrylic	-30	low RI (ca 1.37), fluorinated	21039-25	25 g
Hexafluoro-iso-propyl methacrylate	acrylic		low RI (ca 1.38), fluorinated	02401-10	10 g
1H,1H,3H-Hexafluorobutyl acrylate	acrylic	-22	low RI (ca 1.39), fluorinated	05631-10	10 g
1H,1H,3H-Hexafluorobutyl methacrylate	acrylic		low RI (ca 1.40), fluorinated	05632-10	10 g
1H,1H,5H-Octafluoropentyl acrylate	acrylic	-35	low RI (ca 1.38), fluorinated	21044-25	25 g
1H,1H,5H-Octafluoropentyl methacrylate, min. 98%	acrylic	36	low RI (ca 1.39), fluorinated	21045-25	25 g
Pentabromophenyl acrylate	acrylic		high RI (ca 1.7), brominated aromatic	06344-10	10 g
Pentabromophenyl methacrylate	acrylic		high RI (ca 1.7), brominated aromatic	04253-5	5 g

	Polymerizable Sites	Homopolymer Tg (°C)	Special Features	Catalog #	Size
1H,1H,3H-Tetrafluoropropyl methacrylate	acrylic		low RI (ca 1.4), fluorinated aliphatic	07577-25	25 g
2,4,6-Tribromophenyl acrylate	acrylic		high RI (ca 1.6), brominated aromatic	03330-10	10 g
2,2,2-Trifluoroethyl acrylate	acrylic	-10	low RI (ca 1.44), fluorinated aliphatic	01718-25	25 g
2,2,2-Trifluoroethyl methacrylate	acrylic	80	low RI (ca 1.41), fluorinated aliphatic	02622-25	25 g
N-Vinylcarbazole	vinyl		high RI (ca 1.68)	02429-25	25 g

Hydroxy Containing Monomers

Hydroxyl groups have utility as hydrogen bonding sites and can provide polymers with compatibility for water or polar solvents. These versatile functional groups can be derivitized broadly. Polymers containing free –OH groups can be post reacted with acids, epoxies, isocyanates, etc. to create novel polymer properties and architectures.

	Polymerizable Sites	Polymerizable Synthon	Add'l. Reactive Functionality	Special Features		
4-(2-Acryloxyethoxy)-2-hydroxybenzophenone	mono	acrylic	phenol	UV absorbing, aromatic	19931-10	10 g
4-tert-Butoxystyrene, min. 99%	mono	styrene	phenol (protected)	deprotect with heat	21760-10	10 g
Glycerol monomethacrylate, mixture of isomers	mono	acrylic	hydroxyl	useful for hydrogels	04180-25	25 g
(HEMA 10) Poly Ethoxy (10) ethyl methacrylate	mono	acrylic	hydroxyl	hydrophilic	24890-100	100 g
2-Hydroxyethyl acrylate	mono	acrylic	hydroxyl	homopolymer Tg = 15° C	01902-250	250 g
Hydroxypolyethoxy (10) Allyl Ether, 98%	mono	vinyl	hydroxyl	hydrophilic	24899-100	100 g
N-(2-Hydroxypropyl) methacrylamide	mono	acrylic	hydroxyl	hydrolytic stability	08242-10	10 g
Hydroxypropyl methacrylate, mixture of isomers	mono	acrylic	hydroxyl	aliphatic	00730-1	1 kg
Poly(propylene glycol) (300) monomethacrylate	mono	acrylic	hydroxyl	slightly hydrophilic, long chain graft	15934-250	250 g
Sodium 1-Allyloxy-2 hydroxypropyl Sulfonate				sulfonate salt	24898-100	100 g
1,1,1-Trimethylolpropane diallyl ether	mono	vinyl	hydroxyl	hydrophilic crosslinker	05500-50	50 g
1,1,1-Trimethylolpropane monoallyl ether	mono	vinyl	hydroxyl	hydrophilic crosslinker	15914-50	50 g

Mono and Difunctional Glycol Oligomeric Monomers

Ethylene glycol units are strongly hydrophilic through their multiple H-bonding sites. Monomers of this type are useful in the construction of hydrogels and water compatible polymer structures. New research suggests that bioactive molecules e.g. drugs with attached PEG chains have improved bioavailablity characteristics.

	Polymerizable Synthon (Sites)	Add'l Reactive Group	Approx. # of Glycol Groups	Approx. MW.	Special Features	Catalog #	Size
Poly(ethylene glycol) diacrylate	acrylic (2)	none	4 to 6	314	hydrophilic crosslinking monomer	00669-250	250 g
	acrylic (2)	none	8 to 10	500		01871-250	250 g
	acrylic (2)	none	90 to 100	4,100		15246-1	1 g
Poly(ethylene glycol) dimethacrylate	methacrylic (2)	none	4 to 6	350	hydrophilic crosslinking monomer	00096-100	100 g
	methacrylic (2)	none	8 to 10	550		15179-100	100 g
	methacrylic (2)	none	13 to 15	750		02364-100	100 g
	methacrylic (2)	none	21 to 25	1,150		15178-100	100 g
Poly(ethylene glycol) monomethacrylate	methacrylic (1)	hydroxy	4 to 6	270	long chain monomer, more polar than PO analog, can post react -OH to add additonal functionality	16712-100	100 g
	methacrylic (1)	hydroxy	8 to 10	480		16713-100	100 g
Poly(ethylene glycol) monomethyl ether monomethacrylate	methacrylic (1)	none	4 to 6	280	adds hydrophilic grafts to polymers; adds long chain hydrophilic graft to polymer chain	16664-100	100 g
	methacrylic (1)	none	8 to 10	490		16665-100	100 g
	methacrylic (1)	none	21 to 25	1,090		16666-100	100 g
Poly(propylene glycol) monomethacrylate	methacrylic (1)	hydroxy	3 to 5	440	propylene glycol is more hydrophobic than ethylene glycol long chain monomer, can post react -OH to add functionality	15934-250	250 g
Poly(propylene glycol) dimethacrylate	methacrylic (2)	none	5 to 7	550	less polar than EO analog	04380-250	250 g

Styrenic Monomers

Popular alternatives to acrylic and related monomers, styrenic monomers generally provide polymers of higher glass transition temperature, higher modulus, increased hydrophobic character and nominal UV absorbance. As such, coatings made with high concentrations of styrenic monomers can yellow with time if exposed to UV light. Crosslinked styrene resins (especially in microsphere form) are tough and chemically resistant. These form the basis for ion exchange resins and microbeads used as supports for biochemical reactions.

	Monomer Type	Add'l. Reactive Functionality	Homopolymer Tg (°C)	Special Features	Catalog #	Size
4-tert-Butoxystyrene, min. 99%	protected group	phenol		deprotection gives phenol	21760-10	10 g
4-(tert-Butyl)styrene, 95%	neutral		132	high Tg monomer	02606-25	25 g
4-Chloromethylstyrene	reactive	halogen		Merrifield resin building block	22193-25	25 g
Chloromethylstyrene, 43% para, 57% meta, ~96%	reactive	halogen		Merrifield resin building block	02718-500	500 g
3-Chlorostyrene, 98%			90		02042-5	5 g
2-(Diethylamino)ethylstyrene, mixed m,p-isomers, min. 95%					24100-5	5 g
Divinylbenzene (50 - 60% Active)					01892-100	100 g
Divinylbenzene (80% Active)	neutral	vinyl		aromatic, rigid crosslinker	22478-100	100 g
4-Methylstyrene	neutral		108	aromatic, hydrophobic	04234-100	100 g
2-Methylstyrene	neutral		120	aromatic, hydrophobic	04581-5	5 g
4-Nitrostyrene	reactive	nitro		nitro can be reduced to amine	02634-5	5 g
Styrene	neutral		100		00660-500	500 g
4-Vinylbenzoic acid	reactive	carboxylic acid		versatile -COOH synthesis handle	04485-5	5 g

Sulfonate Containing Monomers

	Polymerizable Sites	Polymerization Synthon	Form of Acid	Special Features	Catalog #	Size
2-Sulfoethyl methacrylate, >90%	mono	acrylic	sulfonic acid	water soluble	02597-50	50 g
3-Sulfopropyl methacrylate, potassium salt, 98%	mono	acrylic	sulfonic acid salt	water soluble	17210-100	100 g
3-Sulfopropyldimethyl-3-methacrylamidopropylammonium, inner salt				Zwitterionic detergent and crosslinker.	16570-5	5 g

UV (light) Active Monomers

Polymers with aliphatic backbones often show little absorbance of light and usually do not absorb in the near and mid UV spectral range. UV absorbing monomers improve the capture of light at these wavelengths. These absorbers can be used to shield the polymer system or an underlying substrate from degradation by UV light, e.g. phenethyl methacrylate containing polymers for optical lenses. Additionally, some UV absorbing materials can act as sensitizers to promote photochemical reactions.

	Polymerization Synthon	Add'l. Reactive Functionality	Homopolymer Tg (°C)	Special Features	Catalog #	Size
2(5-Benzotriazolyl 3-t-butyl 4-methacryloxy)phenyl propionic acid, isooctyl ester	acrylic			UV absorber	24241-1	1 g
2-Cinnamoyloxyethyl acrylate	acrylic	α,β unsat.		photo reactive ester	24014-10	10 g
Cinnamyl methacrylate	acrylic	α,β unsat.		photo reactive ester	02092-5	5 g
Glycidyl cinnamate	epoxide	ethenyl		photo reactive	16090-10	10 g

	Polymerization Synthon	Add'l. Reactive Functionality	Homopolymer Tg (°C)	Special Features	Catalog #	Size
2-(2'-Methacryloxy-5'-methylphenyl) benzotriazole	acrylic			UV absorber	21871-25	25 g
2-(2'-Hydroxy-5'-methylphenyl)-benzotriazole	none			UV absorber	21363-25	25 g
Phenyl acrylate, min. 95%	acrylic		57	UV absorbing	02642-10	10 g
Phenyl methacrylate , >95%	acrylic		110	moderate UV absorbing	02644-10	10 g
2-Phenylethyl acrylate, min. 92%	acrylic		-3	moderate UV absorbing, aromatic, hydrophobic	02834-100	100 g
2-Phenylethyl methacrylate, min. 92%	acrylic		26	moderate UV absorbing	02911-100	100 g
N-(Phthalimidomethyl)acrylamide	acrylic			used in photoresist formulations	19390-25	25 g

Vinyl and Ethenyl Monomers

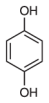
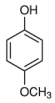
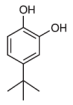
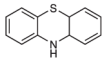
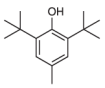
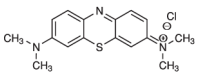
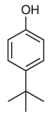
An alternative choice to styrenics and acrylics, these monomers are often used to create polymers with inert main chain features. Many of these monomers can be polymerized via metallocene or other metal mediated polymerization processes.

	Polymerizable Sites	Add'l. Reactive Functionality	Special Features		
Acrolein, distilled, 99% EM grade	mono	aldehyde		00016-5	5x10 ml
Allyl glycidyl ether	mono	epoxide		19191-50	50 g
2,2-Bis[4-(2-acryloxyethoxy)phenyl] propane	dual	rigid crosslinker		04136-25	25 g
3-Butene-1,2,3-tricarboxylic acid	mono			01396-25	25 g
Diallyl Maleate	dual vinyl	vinyl	hydrophilic	02156-250	250 g
Diallyl Maleate - 99% Active	dual vinyl	vinyl	hydrophilic	24892-100	100 g
Diallyl phthalate, practical	dual			02159-1	1 kg
Diallylamine, min. 98%	dual	amine (secondary)		21424-100	100 g
Diallyldimethylammonium chloride, 65% soln. in water	dual			15912-100	100 g
α,α-Dimethyl-3-isopropenylbenzyl isocyanate	mono	isocyanate		19706-100	100 g
Divinyl Adipate	dual			25338-100	100 g
Divinyl glycol	dual			18252-25	25 g
Divinyl sebacate	dual			04632-5	5 g
N-Methyl N-vinyl acetamide	mono		hydrophilic	22065-25	25 g
2-Propene-1-sulfonic acid, sodium salt, 35% soln. in water	mono		sulfonic acid, Na salt	00064-10	10 g
Triallyl cyanurate	tri			01236-100	100 g
Triethylene glycol divinyl ether	dual			19560-100	100 g
1,1,1-Trimethylolpropane diallyl ether	multi	hydroxyl		05500-50	50 g
1,1,1-Trimethylolpropane monoallyl ether	mono	hydroxyl		15914-50	50 g
N-Vinyl acetamide (NVA)	mono			24806-50	50 g
Vinyl azlactone	mono			21329-5	5 g
Vinyl benzoate	mono		aromatic	02664-10	10 g
Vinyl butyrate	mono			02835-10	10 g
Vinyl 2-furoate	mono			02829-10	10 g
Vinyl methyl sulfone	mono			17206-5	5 g

	Polymerizable Sites	Add'l. Reactive Functionality	Special Features	Catalog #	Size
Vinyl octadecyl ether	mono		hydrophobic	01728-100	100 g
Vinyl stearate, min. 95%	mono			01784-100	100 g
N-Vinyl-2-pyrrolidone	mono		hydrophilic	04000-250	250 g
N-Vinylcaprolactam, min. 98%	mono			16818-10	10 g
N-Vinylcarbazole	vinyl		high RI (ca 1.68)	02429-25	25 g
Vinylferrocene	mono		iron complex	04503-1	1 g
1-Vinylimidazole	mono			01726-100	100 g
4-Vinylpyridine	mono			02668-100	100 g
Vinyltriethoxysilane	mono	silyl ether	adhesion promoter	04537-50	50 g
Vinyltriphenylsilane				21543-10	10 g

Polymerization Inhibitors for Monomers

In the Monomer section, we list monomers which are inhibited with a variety of polymerization inhibitors. These inhibitors are chosen for effectiveness, and minimum color formation on storage. Below is a table identifying the inhibitors used and their structures.

Inhibitor	Chemical Name	Structure	Inhibitor	Chemical Name	Structure
HQ	Hydroquinone		Triethylene diamine (DABCO®)	2,4-Diazabicyclo[2.2.2] octane	
MEHQ	Hydroquinone monomethyl ether		t-Butylcatechol	4-t-butylcatechol	
PTZ	Phenothiazine		BHT(butylated hydroxytoluene)	2,6-di-t-Butyl-4-methyl-phenol	
Methylene Blue	3,7-Bis(dimethylamino) -phenazathionium chloride		p-t-Butylphenol	4-t-Butylphenol	

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