

## Monomers for Ophthalmic Applications



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Polymers used in ophthalmic applications have evolved into a variety of specialized types each with a different combination of properties. Many different monomers are used in producing the variety of lenses now fabricated. Each monomer contributes its own properties. Formulating an optimized polymer often requires a delicate balance of the amounts of the component monomers.

Polysciences, Inc. offers an extensive range of monomers to meet the special needs in producing polymers for the major types of ophthalmic lenses - eyeglass lenses, contact lenses and intraocular lens implants. Most of these monomers can be supplied at high purity for producing contact lenses, and intraocular lens implants and are available in bulk quantities.

Copolymers of two or more monomers are generally required to produce the proper combination of properties required in specific types of lenses. Lenses can be prepared which are hard, soft, water permeable, water impermeable, oxygen permeable, UV light absorbing, having low coefficients of friction, resistant to abrasion, containing or releasing drugs or bactericide or combinations of these attributes.

## Hydrophilic Monomers

Product Name	Add'l Reactive Functionality	Special Features	Catalog #	Size
Glycerol monomethacrylate, mixture of isomers	hydroxyl	isomer mixture, useful in hydrogel preparation, -OH can be functionalized in multiple ways	04180-25	25g
2-Hydroxyethyl methacrylate, Ophthalmic grade	hydroxyl, crosslinking	very hydrophilic monomer, useful in forming hydrogel structures	04675-100 04675-500	100g 500g
N-(2-Hydroxypropyl) methacrylamide	hydroxyl	hydrophilic monomer building block, can be post reacted through hydroxyl group	08242-10	10g
Hydroxypropyl methacrylate (mixture of isomers)	hydroxyl	hydrophilic monomer building block, can be post reacted through hydroxyl	00730-500	500g
Poly(ethylene glycol) monomethylether monomethacrylate		adds hydrophilic grafts to polymers; adds long chain hydrophilic graft to polymer chain	16664-100 16664-500	100g 500g
Poly(ethylene glycol) monomethylether mono-methacrylate		hydrophilic macromonomers used to introduce hydrophilic sites into polymers, to stabilize polymer emulsions and in synthesis of comb polymers	16665-100 16665-500	100g 500g
N-Vinyl-2-pyrrolidone		neutral hydrophilic monomer	04000-250	250g

## Neutral Hydrophobic Monomers

Product Name	Homopolymer Tg (°C)	Special Features	Catalog #	Size
Iso-Butyl methacrylate	53	hydrocarbon building block monomer	02056-500	500g
Methyl methacrylate, min. 99.5%	105	versatile building block monomer	00834-1	1L
N-Octyl methacrylate, 99+%	-20	hydrophobic methacrylate monomer	23355-25	25g

## High / Low Refractive Index Monomers

Product Name	Polymerization Synthon	Homopolymer Tg (°C)	Special Features	Catalog #	Size
Allyl Phenyl Ether, 98%	vinyl		hydrophobic	24894-100	100g
Benzhydryl methacrylate	acrylic		high RI (ca 1.56), non-halogenated	24286-10	10g
Benzyl acrylate, ~99%	acrylic	6	high RI (ca 1.55), non-halogenated	01997-100	100g
N-Benzylmethacrylamide	acrylic		high RI (ca 1.60), non-halogenated	17969-25	25g
Benzyl methacrylate, min. 95%	acrylic	54	high RI (ca 1.57), non-halogenated	02000-100	100g
2-(9H-Carbazol-9-yl)- ethyl methacrylate	acrylic		high RI (ca 1.69)	24372-1	1g
4-Chlorophenyl acrylate	acrylic	58	high RI (ca 1.55), chlorinated aromatic	01331-10	10g
1H,1H,7H - Dodecafluoroheptyl methacrylate	acrylic	13	low RI (ca 1.36), fluorinated aliphatic	00767-25	25g
1H,1H,2H,2H-Heptadeca- fluorodecyl acrylate	acrylic	0	low RI (ca 1.34), fluorinated	19227-25	25g
1H,1H,2H,2H-Heptadeca- fluorodecyl methacrylate	acrylic	40	low RI (ca 1.35), fluorinated	19226-25	25g
1H,1H-Heptafluorobutyl acrylate	acrylic	-30	low RI (ca 1.37), fluorinated	21039-25	25g
1H,1H,3H- Hexafluorobutyl acrylate	acrylic	-22	low RI (ca 1.39), fluorinated	05631-10	10g
1H,1H,3H-Hexafluorobutyl methacrylate	acrylic		low RI (ca 1.40), fluorinated	05632-10	10g
Hexafluoro-iso-propyl methacrylate	acrylic		low RI (ca 1.38), fluorinated	02401-10	10g
1H,1H,5H-Octafluoropentyl acrylate	acrylic	-35	low RI (ca 1.38), fluorinated	21044-25	25g
1H,1H,5H-Octafluoropentyl methacrylate, min. 98%	acrylic	36	low RI (ca 1.39), fluorinated	21045-25	25g
Pentabromophenyl acrylate	acrylic		high RI (ca 1.7), brominated aromatic	06344-10	10g
Pentabromophenyl methacrylate	acrylic		high RI (ca 1.7), brominated aromatic	04253-10	10g
Pentafluorophenyl acrylate	acrylic		low RI (ca 1.4), fluorinated aromatic	06349-5	5g
Pentafluorophenyl methacrylate, min. 95%	acrylic		low RI (ca 1.4), fluorinated aromatic	06350-5	5g
1H, 1H, 3H- Tetrafluoropropyl methacrylate	acrylic		low RI (ca 1.4), fluorinated aliphatic	07577-25	25g
2,4,6-Tribromophenyl acrylate	acrylic		high RI (ca 1.6), brominated aromatic	03330-10	10g
2,2,2-Trifluoroethyl acrylate	acrylic	-10	low RI (ca 1.44), fluorinated aliphatic	01718-25	25g
2,2,2-Trifluoroethyl methacrylate	acrylic	80	low RI (ca 1.41), fluorinated aliphatic	02622-25	25g
N-Vinylcarbazole	vinyl		low RI (ca 1.68)	02429-25	25g

## Ionic Monomers

Product Name	Polymerizable Sites	Polymerization Synthon	Add'l Reactive Functionality	Special Features	Catalog #	Size
N-(3-Aminopropyl)- methacrylamide hydrochloride, >98%	mono	acrylic	primary, HCl salt	Benzophenone a strong UV absorber, potential UV radical initiator	21200-5	5g
2-(N,N-Dimethylamino)-ethyl methacrylate, min. 99%	mono	acrylic	UV absorbing	homopolymer Tg =19°C	00213-500	500g
Methacrylic acid,min. 99.5%	mono	acrylic	carboxylic acid	offers latex stability, homopolymer Tg =185°C	00212-450	450g
2-Aminoethyl methacrylate hydrochloride, min. 95%	mono	acrylic	primary, HCl salt	can be used to prepare polymers with amine functionality	21002-10	10g

## UV Absorbing Active Monomers

Product Name	Polymerization Synthon	Add'l Reactive Functionality	Special Features	Homopolymer Tg (°C)	Comments	Catalog #	Size
4-(2-Acryloxyethoxy) - 2-hydroxybenzophenone	acrylic	phenol	UV absorbing		Benzophenone a strong UV absorber, potential UV radical initiator	19931-10	10g
Phenyl acrylate, min. 95%	acrylic		UV absorbing	57	hydrophobic, aromatic building block monomer	02642-10	10g
4-Methacryloxy-2-hydroxybenzophenone, min. 99%	acrylic	phenol	UV absorber			23350-25	25g
2-(2'-Methacryloxy-5'-methylphenyl) benzotriazole	acrylic		UV absorber		UV absorbing monomer, may act as polymerizable sensitizer	21871-25	25g
2-Cinnamoyloxyethyl acrylate	acrylic	$\alpha,\beta$ unsat.	photo reactive ester		Photocrosslinking monomer	24014-10	10g
Cinnamyl methacrylate	acrylic	$\alpha,\beta$ unsat. ester	photo reactive		Photocrosslinking monomer	02092-5	5g
Glycidyl cinnamate	epoxide	ethenyl	photo reactive			16090-10	10g
2-Naphthyl methacrylate			fluorescent monomer		Ex. max = 285 nm Em. min = 345 nm	23602-1	1g
2-Phenylethyl acrylate min. 92%	acrylic		moderate UV absorbing	-3	hydrophobic, aromatic monomer	02834-100	100g
2-Phenylethyl methacrylate, min. 92%	acrylic		moderate UV absorbing	26	hydrophobic, aromatic monomer	02911-100	100g
Phenyl methacrylate, >95%	acrylic		moderate UV absorbing	110	high Tg, aromatic building block monomer	02644-10	10g

## Crosslinking Monomers

Product Name	Add'l Reactive Functionality	Special Features	Catalog #	Size
Ethylene glycol dimethacrylate, min. 98%	aliphatic		24030-250	250g
1,4-Phenylene diacrylate		rigid, aromatic	06389-10	10g
Poly(ethylene glycol) diacrylate	hydrophilic	crosslinking monomer	00669-250	250g

Other ophthalmic monomers with varying chain lengths and hydrophobicity available upon request.

Ask about our newest monomer products!

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