

Monomers for Ophthalmic Applications

DESCRIPTION

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.

Ophthalmic monomers from Polysciences, Inc. are grouped below by properties. The various groups can differ considerably from each other in properties other than the principal property under which they are listed.

Cat. #	Description	Tg (°C)	R.I.	Cat. #	Description	Tg (°C)	R.I.
HYDROPHILIC (HYDROGEL-FORMING) MONOMERS				NEUTRAL HYDROPHOBIC MONOMERS			
04180	Glycerol methacrylate	NA	1.4620	02056	Butyl methacrylate	20	1.4150
04675	2-Hydroxyethyl methacrylate	55	1.4530	01952	Allyl diglycol carbonate	NA	1.4500
08242	N-(2-Hydroxypropyl) methacrylamide	NA	solid at RT	02159	Diallyl phthalate	NA	1.5190
00730	Hydroxypropyl methacrylate	76	1.4470	00834	Methyl methacrylate	105	1.4140
16664	PEG (200) monomethacrylate monomethyl ether	NA	1.4520	23355	N-Octyl methacrylate	20	1.4373
16665	PEG (400) monomethacrylate monomethyl ether	-62	1.4570				
04000	N-Vinyl-2-pyrrolidone	175	1.5120	HIGH REFRACTIVE INDEX			
				04253	Pentabromophenyl methacrylate	NA	NA
				24286	Benzhydryl methacrylate	NA	~1.56 of polymer
				...many others available for forming high R.I. polymers			
UV-ABSORBING MONOMERS				LOW REFRACTIVE INDEX			
19931	4-(2-Acryloxyethoxy)-2-hydroxybenzophenone	NA	solid at RT	00767	1H,1H,7H-Dodecafluoroheptyl methacrylate	13	1.3490
23350	4-Methacryloxy-2-hydroxybenzophenone	NA	solid at RT	21039	1H,1H-Heptafluorobutyl acrylate	30	1.3310
				05632	1H,1H,3H-Hexafluorobutyl methacrylate	NA	1.3610
23602	2-Naphthyl methacrylate	NA	solid at RT	02401	Hexafluoro-iso-propyl methacrylate	NA	1.3310
01036	9-Vinylanthracene	NA	solid at RT	21044	1H,1H,5H-Octafluoropentyl acrylate	-35	1.3490
				21045	1H,1H,5H-Octafluoropentyl methacrylate	36	1.3580
CROSSLINKING MONOMERS				01718	2,2,2-Trifluoroethyl acrylate	-10	1.3500
24030	Ethylene glycol dimethacrylate	NA	1.4540	02622	2,2,2-Trifluoroethyl methacrylate	80	1.3610
06389	1,4-Phenylene diacrylate	NA	1.5307				
				Monomers for Oxygen (Gas) Permeability			
04675	Hexamethylene dimethacrylate	NA	1.4525	Perfluoroalkyl esters and other monomers listed under Low Refractive Index			
00669	PEG (200) diacrylate	NA	1.4639				
...many others available with varying chain lengths and hydrophobicity							
IONIC MONOMERS							
21200	N-(3-Aminopropyl)methacrylamide	NA	solid at RT				
00213	2-(N,N-Dimethylamino)ethyl methacrylate	18	1.4400				
00212	Methacrylic acid	185	1.4310				
21002	2-Aminoethyl methacrylate	NA	solid at RT				

Tg: Glass Transition Temperature of Homopolymers

R.I.: Refractive Index of Monomers

NA: Not Available