PRECISION MOLDED PLASTICS
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GUIDE

PLASTIC INJECTION MOLDING MATERIALS

Common Thermoplastic Polymers

MATERIAL	HIGHLIGHTS	COMMON APPLICATIONS	MASS DENSITY (g/cm^3)	SHRINKAGE (in/in)	CLARITY	TONNAGE PER SQUARE INCH (Estimated)	COST
ABS Acrylonitrile Butadiene Styrene	Flame retardant; impact resistant	Automotive; medical; electrical; appliances; toys	1.02-1.05	0.005	Translucent	2.5-3.5	$
ASA Acrylonitrile Styrene Acrylate	Toughness; chemical, heat and weather/UV resistant	Automotive; outdoor applications; electrical	1.07	0.004-0.007	Opaque	2.5-3.5	$$
EVA Ethylene-Vinyl Acetate	Softness; flexibility; clarity; gloss	Sporting goods; medical; foam; rubber replacement	0.92-0.97	0.007-0.020	Transparent	2.0-3.0	$
HDPE High Density Polyethylene	Rigidity; moisture resistant; food contact	Packaging; food; industrial	0.935-0.96	0.025-0.035	Opaque	2.5-3.5	$
HIPS High Impact Polystyrene	Impact resistant; flame retardant; food contact	Toys; product casings	1.04	0.003-0.007	Translucent	2.0-2.5	$
LDPE Low Density Polyethylene	Chemical resistant; flexibility; toughness; gloss	Food; packaging	0.91-0.925	0.015-0.026	Translucent or Opaque	2.0-3.0	$
LLDPE Linear Low Density Polyethylene	High tensile strength; high impact resistance; flexibility	Bags; packaging; toys; covers; lids; containers	0.918-0.94	0.015-0.035	Translucent	2.0-3.0	$
PA6 Polyamide 6 (Nylon 6)	Heat and chemical resistant; impact modified	Automotive; electrical; industrial; consumer; engineering	1.13	0.009-0.012	Opaque	3.0-4.0	$$
PA66 Polyamide 66 (Nylon 66)	Heat and chemical resistant; impact modified	Automotive; electrical; industrial; consumer; engineering	1.14	0.015-0.020	Opaque	3.0-4.0	$$
PA66 30%GF 30% Glass Filled Polyamide (Nylon 66)	High rigidity, hardness and strength; high stability	Automotive; engineering; gears; cams; bearings; electrical; metal substitute	1.22-1.49	0.003-0.008	Opaque	4.0-5.0	$$
PBT Polybutylene Terephthalate (Polyester) [Valox]	Chemical and heat resistant; mechanical strength	Electrical; automotive; showerheads; irons	1.31	0.012-0.023	Opaque	3.0-4.0	$$
PC Polycarbonate [Lexan]	High impact strength; clarity; flame retardant	Electrical; lighting; automotive; appliances; medical	1.20	0.005-0.007	Transparent	4.0-5.0	$$
PC+ABS Polycarbonate + ABS [Cycoloy]	Toughness; dimensional stability; low moisture absorption	Appliances; automotive; electrical; consumer; medical	1.08-1.22	0.005-0.007	Opaque	3.0-4.0	$$
PEEK Polyether Ether Ketone	Mechanical and chemical resistance	Bearings; piston parts; aerospace; automotive; medical; chemical processing	1.30-1.50	0.010-0.020	Opaque	5.0	$$$
PEI Polyetherimide [Ultem]	High tensile strength; flame retardant; chemical resistant	Electrical; aerospace; medical; lighting; appliances	1.27	0.006	Translucent	4.0-6.0	$$$
PET Polyethylene Terephthalate [Dacron]	Lightweight; moisture barrier; strength; impact resistant	Bottles; food packaging	1.44-1.73	0.002	Transparent	4.0-5.0	$$
PMMA Polymethyl Methacrylate (Acrylic)	High clarity; weather, heat and chemical resistant	Glass substitute; automotive; lighting; medical; lenses; optics	1.19	0.002-0.006	Transparent	3.0-4.0	$
POM Polyoxymethylene (Acetal) [Celcon; Delrin]	Lubricated; wear and chemical resistant; stiffness	Automotive; industrial; mechanical; electrical	1.41-1.42	0.018-0.035	Opaque	3.0-4.0	$$
PP (Copolymer) Polypropylene Copolymer	Impact resistant; lightness; food contact	Automotive; household; electrical; packaging	0.90	0.010-0.025	Opaque	2.5-3.5	$
PP (Homopolymer) Polypropylene Homopolymer	Impact resistant; lightness; food contact	Automotive; household; electrical; packaging	0.902	0.010-0.025	Translucent	2.5-3.5	$
PPE Polyphenylene Ether	Electrical properties; flame retardant; chemical resistant; low moisture absorption	Electrical; appliances; construction; automotive	1.13	0.006	Translucent	3.0-4.0	$$
PPS Polyphenylene Sulfide [Ryton]	Chemical and fire resistance; thermal and dimensional stability	Automotive; electrical; industrial; appliances	1.40-2.00	0.003-0.010	Opaque	3.5-4.5	$$
PS Polystyrene (GPPS)	Impact resistant; flame retardant; food contact	Packaging; electrical; toys; appliances	1.05	0.003-0.007	Transparent	2.0-2.5	$
PVC Polyvinyl Chloride	Flame retardant; high impact resistance	Industrial; electronic	1.22	0.002	Opaque	2.0-3.0	$
SAN Styrene Acrylonitrile	Chemical and heat resistance; clarity	Electrical; appliances; automotive	1.06	0.002-0.005	Transparent	2.5-3.5	$$
TPE Thermoplastic Elastomer	Elasticity; chemical and weather resistant	Rubber substitute; automotive; seals; overmolding	0.87-1.20	0.017-0.047	Translucent	2.5-3.5	$$
TPU Thermoplastic Polyurethane	Range of hardness grades; abrasion and chemical resistant	Footwear; sporting goods; wheels; seals	1.01-1.23	0.012-0.017	Transparent	3.0-4.0	$$
TPV Thermoplastic Vulcanizate [Santoprene]	Strength; flexibility; lightweight	Automotive; appliances; electrical; construction; healthcare; industrial	0.92-0.97	0.010-0.050	Transparent	2.5-3.5	$$

Clarity: Opaque = No light passes through; Transparent = Some light passes through; Translucent = Light passes through