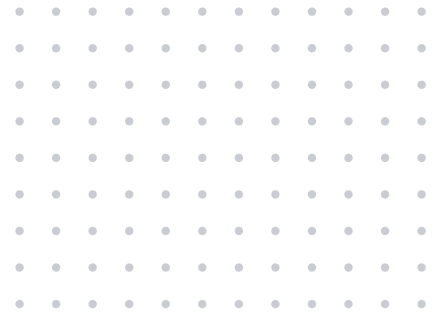




PRATISHNA ENGINEERS LTD.

Excellence is our Forte · Since 1991

BUYER RESOURCE · 2026



THERMOPLASTICS FOR INJECTION MOULDING

PLASTIC MATERIAL

Selection Guide

Properties, processing data and machine requirements for the thermoplastics used in injection moulding – and a method for choosing between them.

CONTENTS

INDEX

INTRODUCTION	WHY MATERIAL CHOICE COMES FIRST	4
	How Thermoplastics Are Classified	4
	Amorphous vs Semi-Crystalline	4
STEP 01	DEFINE THE PART REQUIREMENTS	5
	The Six-Step Selection Method	5
STEP 02	MATERIAL COMPARISON MATRIX	6
	Quick Guide: Which Material for Which Need?	6
STEP 03	COMMODITY MATERIAL PROFILES	7
	PP – Polypropylene	7
	HDPE – High-Density Polyethylene	7
	LDPE – Low-Density Polyethylene	7
	PS / HIPS – Polystyrene / High-Impact PS	7
STEP 03	ENGINEERING MATERIAL PROFILES	8
	ABS – Acrylonitrile Butadiene Styrene	8
	PC – Polycarbonate	8
	PA 6 / PA 66 – Polyamide (Nylon)	8
	POM – Polyoxymethylene (Acetal)	8
STEP 03	ENGINEERING & SPECIALTY PROFILES	9
	PMMA – Polymethyl Methacrylate (Acrylic)	9
	PET – Polyethylene Terephthalate	9
	PBT – Polybutylene Terephthalate	9
	Rigid PVC – Polyvinyl Chloride (unplasticised)	9
STEP 04	PROCESSING CONSIDERATIONS	10
	Drying Hygroscopic Materials	10
	Shrinkage and Warpage	10
	Melt and Mould Temperature	10
	Injection Pressure	10
STEP 05	WHAT EACH MATERIAL NEEDS FROM THE MACHINE	11
STEP 06	ADDITIVES, FILLERS AND REINFORCEMENTS	12
	Cost per Part, Not per Kilogram	12
APPLICATIONS	MATERIALS BY INDUSTRY AND APPLICATION	13
	COMMON MATERIAL SELECTION MISTAKES	14

**BEFORE YOU
DECIDE**

CHECKLIST	MATERIAL SELECTION CHECKLIST	15
	Part and Application	15
	Service Conditions	15
	Appearance and Production	15
ABOUT US	PRATISHNA ENGINEERS – INJECTION MOULDING MACHINE MANUFACTURER IN INDIA	16
	Installation, Training and After-Sales Support	16

INTRODUCTION

WHY MATERIAL CHOICE COMES FIRST

The plastic material decides how a part performs, what it costs and how it must be moulded. It also shapes the machine specification – screw, barrel, dryer, pressure and temperature control.

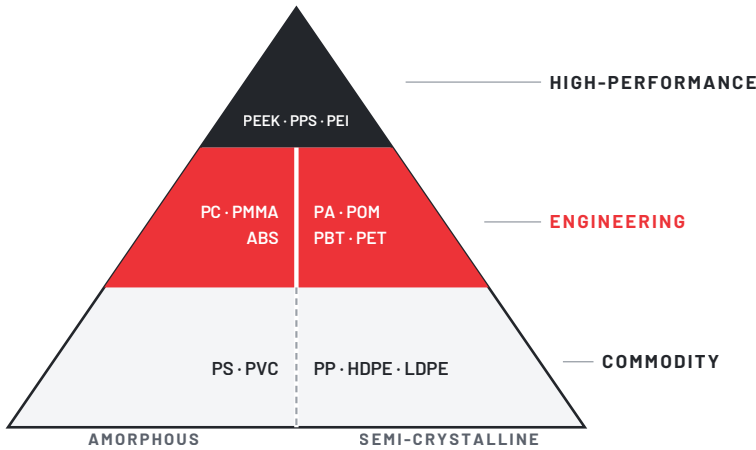
A part can fail because the material was wrong even when the mould and machine are right: a housing that cracks under a solvent, a clip that creeps under load, a container that warps in a hot warehouse. Choosing the material early – against clear requirements – avoids costly mould changes and trial-and-error later.

This guide gives buyers and product engineers a practical route through the choice. It covers the main thermoplastics used on Pratishna injection moulding machines, their properties and processing data, and what each material needs from the machine.

HOW THERMOPLASTICS ARE CLASSIFIED

By performance and cost. Commodity plastics (PP, PE, PS, PVC) are produced in the largest volumes at the lowest cost. Engineering plastics (ABS, PC, PA, POM, PBT, PET, PMMA) offer higher strength, heat resistance or clarity. High-performance plastics such as PEEK, PPS and PEI serve extreme temperature and chemical duties.

By structure. Amorphous plastics (left half of the pyramid) have randomly arranged molecules; semi-crystalline plastics (right half) have ordered regions that melt at a defined temperature. The difference affects clarity, shrinkage and chemical resistance.



AMORPHOUS VS SEMI-CRYSTALLINE

PROPERTY	AMORPHOUS (ABS, PC, PS, PMMA, PVC)	SEMI-CRYSTALLINE (PP, PE, PA, POM, PBT, PET)
Clarity	Can be transparent	Usually translucent or opaque
Mould shrinkage	Low: about 0.3 – 0.7%	Higher: about 1 – 3%
Warpage	Less prone	More prone; needs uniform cooling
Chemical resistance	Lower; risk of stress cracking	Generally good
Melting behaviour	Softens gradually	Melts sharply at a set temperature
Fatigue and wear	Moderate	Good – suits clips, gears, hinges

STEP 01

DEFINE THE PART REQUIREMENTS

List what the part must do before looking at materials. The requirements rule materials in or out; price and processing then decide between those that remain.

REQUIREMENT	WHAT TO DEFINE	PRIORITY
Mechanical	Strength, stiffness, impact resistance, creep under constant load, fatigue, wear and friction	☐ Must ☐ Nice
Thermal	Continuous service temperature, peak temperature, heat deflection, low-temperature impact	☐ Must ☐ Nice
Chemical	Contact with oils, fuels, solvents, detergents, fertilisers, water and steam	☐ Must ☐ Nice
Environmental	Outdoor exposure and UV, humidity, weathering, moisture absorption	☐ Must ☐ Nice
Electrical	Insulation, flame retardancy (UL 94 rating), tracking resistance	☐ Must ☐ Nice
Regulatory	Food contact, medical or potable-water approvals, RoHS / REACH compliance	☐ Must ☐ Nice
Appearance	Transparency, gloss, colour, surface finish, paintability	☐ Must ☐ Nice
Dimensional	Tolerances, shrinkage, warpage, stability over time and humidity	☐ Must ☐ Nice
Commercial	Material price per kg, density, availability, production volume	☐ Must ☐ Nice

THE SIX-STEP SELECTION METHOD

01 DEFINE THE REQUIREMENTS

Use the table above; mark each as a must-have or a nice-to-have.

02 SHORTLIST BY SERVICE TEMPERATURE AND LOAD

Eliminate materials that cannot survive the temperature or carry the load.

03 CHECK CHEMICAL, ENVIRONMENTAL AND REGULATORY NEEDS

Remove materials that fail chemical contact, UV exposure or approvals.

04 COMPARE PROPERTIES AND PROCESSING

Use the comparison matrix and material profiles in this guide.

05 COMPARE COST PER PART – NOT PER KG

Density changes how much material each part consumes.

06 PROTOTYPE AND TEST

Mould trial parts and test them in real service conditions.

STEP 02

MATERIAL COMPARISON MATRIX

A relative comparison of unfilled general-purpose grades. Use it to shortlist materials quickly, then check the detailed profiles and supplier data sheets.

MATERIAL	STRENGTH & STIFFNESS	IMPACT	HEAT RESISTANCE	CHEMICAL RESISTANCE	TRANSPARENCY	WEAR & FRICTION	ECONOMY
PP	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●
HDPE	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●
LDPE	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●
PS (GPPS)	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●
HIPS	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●
ABS	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●
PC	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●
PA 6 / PA 66	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●
POM	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●
PMMA	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●
PET	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●
PBT	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●
Rigid PVC	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●

●●●●● = best in class for that property. "Economy" rates material cost – more dots means lower cost. Ratings are relative and indicative; glass-filled, impact-modified, heat-stabilised and flame-retardant grades change them significantly.

QUICK GUIDE: WHICH MATERIAL FOR WHICH NEED?

IF THE PART MUST...	CONSIDER
Be low-cost and chemically resistant	PP, HDPE
Flex repeatedly (living hinge)	PP
Be tough at low temperature	HDPE, LDPE, PC
Be transparent	PC (tough), PMMA (scratch-resistant, clear), GPPS (low cost), PET
Have a good surface finish for housings	ABS, HIPS, PC/ABS
Carry load at elevated temperature	PA 66, PBT, PC, glass-filled grades
Slide or run as a gear	POM, PA
Resist fuels and oils	POM, PA, PBT, HDPE
Be flame-retardant for electrical use	FR grades of PC, PA, PBT, ABS
Be rigid and weather-resistant for building	Rigid PVC, UV-stabilised PP

STEP 03

COMMODITY MATERIAL PROFILES

Key processing data and characteristics of the main injection-moulding thermoplastics. Values are typical for unfilled general-purpose grades – always confirm with the grade's data sheet.

PP – POLYPROPYLENE

SEMI-CRYSTALLINE · COMMODITY

Density (g/cm ³)	0.90 – 0.91
Melt temperature (°C)	200 – 280
Mould temperature (°C)	20 – 60
Drying	Not required
Mould shrinkage (%)	1.0 – 2.5
Continuous use (°C)	≈ 100

STRENGTHS Low cost and density, excellent chemical resistance, living hinges, easy flow for thin walls.

LIMITATIONS Brittle below about 0 °C (homopolymer), UV-sensitive unless stabilised, high shrinkage and warpage.

TYPICAL PARTS Containers, closures, crates, buckets, automotive trims, irrigation fittings, furniture.

HDPE – HIGH-DENSITY POLYETHYLENE

SEMI-CRYSTALLINE · COMMODITY

Density (g/cm ³)	0.94 – 0.97
Melt temperature (°C)	200 – 280
Mould temperature (°C)	20 – 60
Drying	Not required
Mould shrinkage (%)	1.5 – 3.0
Continuous use (°C)	≈ 80

STRENGTHS Tough, good low-temperature impact, excellent chemical and moisture resistance, low cost.

LIMITATIONS Low stiffness and heat resistance, high shrinkage, difficult to print or bond.

TYPICAL PARTS Buckets, crates, caps, drip emitters, pipe fittings, bins, industrial containers.

LDPE – LOW-DENSITY POLYETHYLENE

SEMI-CRYSTALLINE · COMMODITY

Density (g/cm ³)	0.91 – 0.93
Melt temperature (°C)	180 – 260
Mould temperature (°C)	20 – 50
Drying	Not required
Mould shrinkage (%)	1.5 – 3.0
Continuous use (°C)	≈ 60

STRENGTHS Very flexible and tough, easy to process, good chemical resistance.

LIMITATIONS Low strength and heat resistance, soft surface.

TYPICAL PARTS Flexible lids, squeeze parts, grommets, seals, drip line fittings.

PS / HIPS – POLYSTYRENE / HIGH-IMPACT PS

AMORPHOUS · COMMODITY

Density (g/cm ³)	1.04 – 1.05
Melt temperature (°C)	180 – 260
Mould temperature (°C)	20 – 60
Drying	Not usually needed
Mould shrinkage (%)	0.3 – 0.7
Continuous use (°C)	≈ 70

STRENGTHS Low cost, rigid, good dimensional stability; GPPS is crystal clear, HIPS is impact-modified.

LIMITATIONS GPPS is brittle; poor resistance to solvents and oils; limited heat resistance.

TYPICAL PARTS Disposable cutlery, cups, trays, stationery, appliance liners, toys, cosmetic packs.

STEP 03

ENGINEERING MATERIAL PROFILES

Continued. For glass-filled grades, shrinkage falls and stiffness and heat resistance rise, but wear on the screw and barrel increases.

ABS — ACRYLONITRILE BUTADIENE STYRENE

AMORPHOUS · ENGINEERING

Density (g/cm ³)	1.04 – 1.06
Melt temperature (°C)	220 – 260
Mould temperature (°C)	40 – 80
Drying	80 °C for 2 – 4 h
Mould shrinkage (%)	0.4 – 0.7
Continuous use (°C)	≈ 80

STRENGTHS Tough and rigid with excellent surface finish; easy to paint, plate and bond.

LIMITATIONS Poor UV and solvent resistance; moderate heat resistance.

TYPICAL PARTS Electrical housings, appliance parts, automotive interiors, toys, luggage, helmets.

PC — POLYCARBONATE

AMORPHOUS · ENGINEERING

Density (g/cm ³)	1.20
Melt temperature (°C)	280 – 320
Mould temperature (°C)	80 – 110
Drying	120 °C for 3 – 4 h
Mould shrinkage (%)	0.5 – 0.7
Continuous use (°C)	≈ 115

STRENGTHS Transparent, very high impact strength, good heat resistance and dimensional stability.

LIMITATIONS Sensitive to stress cracking with some chemicals; needs thorough drying and high melt temperature.

TYPICAL PARTS Lighting covers, safety visors, electrical enclosures, medical devices, optical parts.

PA 6 / PA 66 — POLYAMIDE (NYLON)

SEMI-CRYSTALLINE · ENGINEERING

Density (g/cm ³)	1.13 – 1.14
Melt temperature (°C)	PA 6: 240 – 280 PA 66: 270 – 300
Mould temperature (°C)	60 – 90
Drying	80 °C for 4 – 6 h (dehumidified)
Mould shrinkage (%)	0.8 – 2.0 (unfilled)
Continuous use (°C)	≈ 90 – 110

STRENGTHS Strong, tough, wear-resistant, good heat and oil resistance; widely used glass-filled.

LIMITATIONS Absorbs moisture, changing dimensions and properties; must be dried carefully.

TYPICAL PARTS Gears, bushes, cable ties, automotive under-bonnet parts, power-tool housings.

POM — POLYOXYMETHYLENE (ACETAL)

SEMI-CRYSTALLINE · ENGINEERING

Density (g/cm ³)	1.41
Melt temperature (°C)	190 – 220
Mould temperature (°C)	60 – 100
Drying	Usually not needed
Mould shrinkage (%)	1.8 – 2.5
Continuous use (°C)	≈ 90

STRENGTHS High stiffness, low friction, excellent wear and fatigue resistance, dimensional stability.

LIMITATIONS Degrades if overheated, releasing formaldehyde; poor UV resistance; hard to bond.

TYPICAL PARTS Gears, cams, clips, fasteners, zip sliders, valve and pump parts, sprinkler parts.

STEP 03

ENGINEERING & SPECIALTY PROFILES

Continued. For glass-filled grades, shrinkage falls and stiffness and heat resistance rise, but wear on the screw and barrel increases.

PMMA – POLYMETHYL METHACRYLATE (ACRYLIC)

AMORPHOUS · ENGINEERING

Density (g/cm ³)	1.18 – 1.19
Melt temperature (°C)	220 – 260
Mould temperature (°C)	50 – 80
Drying	80 °C for 3 – 4 h
Mould shrinkage (%)	0.2 – 0.8
Continuous use (°C)	≈ 75

STRENGTHS Excellent clarity and weather resistance, scratch-resistant, rigid.

LIMITATIONS Brittle, notch-sensitive; limited chemical resistance.

TYPICAL PARTS Light guides, lenses, display windows, tail-lamp covers, signage, cosmetic caps.

PET – POLYETHYLENE TEREPHTHALATE

SEMI-CRYSTALLINE · ENGINEERING

Density (g/cm ³)	1.33 – 1.38
Melt temperature (°C)	270 – 290
Mould temperature (°C)	10 – 30 (preforms)
Drying	160 – 170 °C for 4 – 6 h (dehumidified)
Mould shrinkage (%)	0.2 – 0.5 (amorphous preform)
Continuous use (°C)	≈ 60 – 100

STRENGTHS Clear when amorphous, strong, excellent gas barrier, recyclable.

LIMITATIONS Very sensitive to moisture – hydrolyses if not dried; needs dedicated machine set-up.

TYPICAL PARTS Bottle and jar preforms, food containers, cosmetic packaging.

PBT – POLYBUTYLENE TEREPHTHALATE

SEMI-CRYSTALLINE · ENGINEERING

Density (g/cm ³)	1.30 – 1.31
Melt temperature (°C)	240 – 270
Mould temperature (°C)	40 – 80
Drying	120 °C for 2 – 4 h
Mould shrinkage (%)	1.5 – 2.0 (unfilled)
Continuous use (°C)	≈ 120

STRENGTHS Good electrical properties, heat and chemical resistance, fast cycles; usually glass-filled.

LIMITATIONS Notch-sensitive; hydrolysis in hot water; warpage in unfilled grades.

TYPICAL PARTS Connectors, switches, relay housings, lamp holders, automotive sensors.

RIGID PVC – POLYVINYL CHLORIDE (UNPLASTICISED)

AMORPHOUS · COMMODITY

Density (g/cm ³)	1.35 – 1.45
Melt temperature (°C)	170 – 200
Mould temperature (°C)	20 – 60
Drying	Not required
Mould shrinkage (%)	0.2 – 0.5
Continuous use (°C)	≈ 60

STRENGTHS Rigid, flame-retardant, weather-resistant, low cost.

LIMITATIONS Narrow processing window; degrades releasing corrosive HCl; needs special screw and barrel.

TYPICAL PARTS Pipe fittings, electrical conduit fittings, sanitary parts, junction boxes.

STEP 04

PROCESSING CONSIDERATIONS

Every material has its own processing window. These factors affect cycle time, part quality and the equipment the machine must be supplied with.

DRYING HYGROSCOPIC MATERIALS

Hygroscopic plastics absorb moisture from the air. Moulded wet, they show splay marks, bubbles and brittleness – PET, PC, PBT and nylon can also lose strength permanently through hydrolysis.

MATERIAL	NEEDS DRYING?	TYPICAL CONDITIONS	DRYER TYPE
PP, PE, PS, PVC, POM	No (unless contaminated)	—	—
ABS, PMMA	Yes	80 °C, 2 – 4 h	Hot-air dryer
PC	Yes	120 °C, 3 – 4 h	Hot-air or dehumidifying
PA 6 / PA 66	Yes	80 °C, 4 – 6 h	Dehumidifying dryer
PBT	Yes	120 °C, 2 – 4 h	Dehumidifying dryer
PET	Yes – critical	160 – 170 °C, 4 – 6 h	Dehumidifying dryer

SHRINKAGE AND WARPAGE

Semi-crystalline plastics shrink more (about 1 – 3%) and less uniformly than amorphous ones (about 0.3 – 0.7%). The mould is cut oversize to compensate, so **a mould built for one material cannot simply run another**. Glass fibres reduce shrinkage along the flow but cause different shrinkage across it, which can warp flat parts.

MELT AND MOULD TEMPERATURE

Engineering plastics generally need higher melt temperatures (PC up to 320 °C) and heated moulds (60 – 110 °C) for good surface finish, crystallinity and low stress. A mould temperature controller is often needed. Commodity plastics mould well with chilled or water-cooled moulds for fast cycles.

INJECTION PRESSURE

Stiff melts (PC, PMMA, filled grades) and thin walls need higher injection pressure and a higher clamping-force factor. See the *Clamping Force & Shot-Size Calculation Guide* for pressure factors by material.

STEP 05

WHAT EACH MATERIAL NEEDS FROM THE MACHINE

Tell Pratishna the exact material grade at enquiry stage, so the injection unit, controls and auxiliaries are specified to suit it.

MATERIAL TYPE	MACHINE REQUIREMENT	WHY
Glass- or mineral-filled grades	Bimetallic barrel, hardened wear-resistant screw and check ring	Fillers are abrasive and wear standard screws and barrels quickly
Rigid PVC	Corrosion-resistant (chrome-plated) screw, low-shear design, accurate heater control	PVC degrades above its narrow window, releasing corrosive HCl
PET	Dedicated PET injection unit, dehumidifying dryer, chilled moulds	Preforms need dry material, controlled melt and rapid cooling to stay clear
PA 6 / PA 66	Shut-off nozzle, dehumidifying dryer, mould temperature controller	Low melt viscosity causes nozzle drool; moisture must be removed
PC, PMMA	High heating capacity, high injection pressure, clean barrel	High melt temperature and stiff melt; optical parts need contamination-free melt
POM	Accurate temperature control, avoid long residence time	Overheating releases formaldehyde and causes black specks
Hygroscopic materials generally	Hopper dryer or dehumidifying dryer with loader	Moisture causes splay, bubbles and weak parts
Thin-wall PP / PE packaging	High injection speed and pressure, fast dry cycle	Thin walls freeze quickly and need rapid filling

SAFETY: NEVER MIX POM AND PVC

Residual PVC and POM must never meet in the barrel – the reaction can release gases violently. Purge thoroughly with PP or PE when changing between them.

PRATISHNA OPTIONS

Pratishna machines can be supplied with hopper dryers and loaders, core pull, extra-long ejectors and material-specific screw and barrel configurations. PET processing is covered by Pratishna's dedicated PET injection moulding machines.

STEP 06

ADDITIVES, FILLERS AND REINFORCEMENTS

Most parts are moulded from modified grades rather than the base polymer. Additives change properties – and sometimes the processing and machine requirements.

ADDITIVE	EFFECT ON THE PART	EFFECT ON PROCESSING
Glass fibre (10 – 50%)	Much higher strength, stiffness and heat resistance; lower shrinkage	Abrasive; higher pressure; needs wear-resistant screw and barrel; anisotropic warpage
Mineral / talc	Higher stiffness, lower warpage, better dimensional stability	Mildly abrasive; increases density
Impact modifier	Higher toughness, especially at low temperature	Slightly lower stiffness and heat resistance
UV stabiliser	Protects outdoor parts from embrittlement and fading	None significant – essential for agricultural parts
Flame retardant	Achieves UL 94 V-0 / V-2 ratings for electrical parts	Narrower processing window; possible corrosion and deposits
Colour masterbatch	Colour and opacity	Needs good mixing; can slightly change shrinkage
Antistatic / slip agents	Reduce static and friction	Can bloom to surface
Recycled content (regrind)	Lower material cost, sustainability	Limit percentage; properties vary – must be dry and clean

COST PER PART, NOT PER KILOGRAM

MATERIAL COST PER PART

$$\text{Cost} = \text{Part volume (cm}^3\text{)} \times \text{Density (g/cm}^3\text{)} \div 1000 \times \text{Price (₹/kg)}$$

A denser material uses more kilograms for the same part. POM (1.41) needs 57% more material by weight than PP (0.90) for an identical part.

EXAMPLE

A part of 100 cm³ uses 90 g of PP but 141 g of POM. At the same price per kg, the POM part costs 57% more in material alone.

APPLICATIONS

MATERIALS BY INDUSTRY AND APPLICATION

Typical material choices across the industries served by Pratishna machines. Use this as a starting point, then confirm against your own part requirements.

INDUSTRY	TYPICAL PARTS	COMMON MATERIALS
Agriculture & irrigation	Drip emitters, sprinklers, fittings, nursery pots, crates	PP, HDPE, LDPE, POM – UV-stabilised
Packaging	Containers, closures, caps, thin-wall tubs, preforms	PP, HDPE, PS, PET
Automotive	Trims, clips, under-bonnet parts, lamp covers, housings	PP, ABS, PA 66-GF, POM, PC, PBT, PMMA
Electrical & electronics	Switches, sockets, connectors, housings, conduit fittings	PC, PA, PBT, ABS (FR grades), rigid PVC
Household products	Buckets, tubs, storage boxes, furniture, kitchenware	PP, HDPE, ABS, PS
Medical	Syringes, housings, labware, device components	Medical-grade PP, PC, PE
Building & sanitary	Pipe fittings, taps, cisterns, fixtures	Rigid PVC, PP, ABS
Toys & stationery	Toy parts, pens, rulers, office items	ABS, PP, HDPE, PS
Engineering & industrial	Gears, bushes, pump and valve parts	POM, PA, PBT, glass-filled grades

EXAMPLE: DRIP IRRIGATION EMITTER

HDPE or PP · UV-stabilised

Emitters need chemical resistance to fertilisers, outdoor UV durability and dimensional precision for uniform flow, at low cost in high volumes. HDPE or PP with UV stabiliser meets all four, processes without drying, and runs efficiently in multi-cavity moulds on horizontal machines.

BEFORE YOU DECIDE

COMMON MATERIAL SELECTION MISTAKES

The issues that most often cause part failures and moulding problems after production has started.

- 01** **Choosing by price per kg alone**
Density and cycle time change the real cost per part.
- 02** **Ignoring service temperature**
Many commodity plastics soften well below 100 °C.
- 03** **Forgetting chemical contact**
Solvents, oils and cleaning agents can stress-crack amorphous plastics such as PC and ABS.
- 04** **Skipping UV protection outdoors**
Unstabilised PP and POM become brittle in sunlight.
- 05** **Moulding without drying**
Wet PC, PA, PET and PBT lose strength permanently.
- 06** **Switching materials in an existing mould**
Different shrinkage changes part dimensions.
- 07** **Using standard screws for filled grades**
Glass fibres wear standard screws and barrels quickly.
- 08** **Specifying the base polymer instead of the grade**
Grades of the same polymer differ widely; name the exact grade.
- 09** **Ignoring regulatory approvals**
Food, medical and potable-water parts need certified grades.
- 10** **Not testing parts in real conditions**
Data sheets use standard test bars; real parts behave differently.

CHECKLIST

MATERIAL SELECTION CHECKLIST

Complete this checklist and share it with your part drawing at sales@pratishnaengineers.com. Pratishna will recommend a suitable machine and configuration for your material.

PART AND APPLICATION

Product / component name	
Industry / application	
Proposed material and exact grade	
Filler or reinforcement	☐ None ☐ Glass ☐ Mineral ☐ Other

SERVICE CONDITIONS

Continuous / peak temperature (°C)	
Load, impact or wear conditions	
Chemicals the part contacts	
Outdoor / UV exposure	☐ Yes ☐ No
Approvals required	☐ Food ☐ Medical ☐ UL 94 ☐ RoHS

APPEARANCE AND PRODUCTION

Transparency / colour / finish	
Critical dimensions and tolerances	
Part weight (g) / cavities	
Annual production volume	
Auxiliaries required	☐ Dryer ☐ Loader ☐ MTC ☐ Robot

ABOUT US

PRATISHNA ENGINEERS – INJECTION MOULDING MACHINE MANUFACTURER IN INDIA

Founded in Mumbai in 1991, Pratishna Engineers Limited designs, manufactures, installs and supports plastic injection moulding machines for manufacturers across India and international markets.

35+

YEARS OF MACHINE BUILDING

9,000+

MACHINES SUPPLIED

1,000+

CUSTOMERS SERVED

40-350 T

CLAMPING-FORCE RANGE

All machines are designed and built in-house – from machine design, hydraulics and controls to machining, assembly and testing – at our Mumbai facility equipped with CNC turning centres, vertical and horizontal machining centres and jig boring machines. Pratishna's hydro-mechanical two-platen and hybrid machines were among the first of their kind developed in India.

Our range covers horizontal, PET, custom, two-platen, hybrid and vertical injection moulding machines, used for automotive, packaging, electrical and electronics, medical, household, agriculture and industrial applications.

INSTALLATION, TRAINING AND AFTER-SALES SUPPORT

- Application-based machine selection
- Installation and commissioning
- Operator training
- Preventive maintenance and troubleshooting
- Spare-parts availability
- Machine lifecycle support

CONTACT US FOR A MACHINE RECOMMENDATION

Send your component details – we'll recommend the right machine.

Pratishna Engineers Ltd.

A1-4, Vaibhav Ind. Premises,
Opp. Oxford Chambers, Saki Vihar Road,
Andheri (E), Mumbai – 400 072, India

Tel: +91-22-66970281 / 82

sales@pratishnaengineers.com

marketing@pratishnaengineers.com

www.pratishnaengineers.com · www.pratishnamachines.com

The formulas, factors and figures in this guide are indicative and intended to help buyers prepare a machine requirement. Final machine selection should be confirmed with Pratishna Engineers based on the actual component, material and mould. Specifications are subject to change without notice. © 2026 Pratishna Engineers Ltd.