

# VAC; Casting, Forming | RIM & IM Tech & Material



**SHIFT3D**

Your Smart Manufacturing Partner

Technology	Material	Benefits	Limitations	Volume Range	Price Point	Tooling Options
Vacuum & Silicone Casting	Polyurethane resins, ABS-like materials, rubber-like elastomers, flame-retardant materials	Cost-effective for low-volume production- High-quality surface finish- Flexible material choices- Good for prototyping & functional testing	Limited to small production runs- Shorter mould lifespan compared to injection moulding- Not suitable for high-temperature applications	10 – 100 parts	Low to Medium	Silicone moulds (short lifespan, approx. 20-25 casts per mould)
Reaction Injection Moulding (RIM)	Polyurethane, structural foams, elastomers	Strong, lightweight parts- Can produce complex geometries- Suitable for medium-scale production- Good impact resistance	Longer cycle time compared to injection moulding- High initial tooling cost- Limited to specific materials	100 – 5,000 parts	Medium to High	Aluminium or composite moulds (medium durability)
Injection Moulding (IM)	Thermoplastics (ABS, Polypropylene, Nylon, Polycarbonate, etc.), Thermosetting plastics	Ideal for high-volume production- High repeatability and precision- Wide range of material choices- Consistent part quality	High tooling and setup costs- Longer lead times for mould production- Not cost-effective for small runs	5,000 – 1,000,000+ parts	High	Steel or aluminium moulds (long lifespan, high precision)
Vacuum Forming	ABS, Acrylic, Polycarbonate, PVC, Polyethylene, Polypropylene	Low tooling cost compared to injection moulding- Good for large parts with shallow detail- Quick turnaround time- Lightweight and cost-effective parts	Limited to relatively simple geometries- Thinner material sections may warp- Lower structural strength compared to other moulding methods	100 – 10,000 parts	Low to Medium	Wooden, composite, or aluminium moulds (varied durability)