MATERIAL SELECTION GUIDE

A decision guide connecting component duty, polymer behaviour, mould engineering and production evidence.



ENGINEERING-LED	PRODUCTION-AWARE	CMS MANAGED

ENGINEERING CONTEXT

This resource supports early technical discussions and structured programme reviews. It does not replace project-specific DFM, material data, simulation, trial evidence or an authorised commercial agreement.

START WITH SERVICE CONDITIONS

Material selection begins with the component duty, not a generic resin family.

+ Mechanical load and creep
+ Temperature and thermal cycling
+ Chemical, UV and moisture exposure
+ Electrical or flame requirements
+ Appearance and tactile requirements
+ Regulatory and traceability needs

CONNECT MATERIAL TO GEOMETRY

A polymer grade changes what the product and mould must accommodate.

+ Nominal wall and flow length
+ Draft and surface texture
+ Rib and boss strategy
+ Snap fits and living features
+ Anisotropic shrinkage with fibre reinforcement
+ Metal inserts and local stress

CONNECT MATERIAL TO THE MOULD

Material behaviour affects gate, runner, venting, cooling, steel and maintenance decisions.

+ Melt and mould temperature window
+ Shear sensitivity and gate sizing
+ Venting and volatile management
+ Cooling demand and circuit placement
+ Steel wear and corrosion resistance
+ Drying, purging and contamination controls

VALIDATE THE ACTUAL GRADE

Supplier data is an input. Final confidence comes from the specified grade, production-equivalent process conditions and agreed component tests.

+ Obtain current technical and safety data
+ Confirm colour and additive package
+ Use production-representative drying and handling
+ Record process settings during trials
+ Measure dimensional change after conditioning

REVIEW RECORD

PROGRAMME CHECKLIST

Use the final column for the document, model view, report, decision reference or responsible owner that closes each point.

CHECK	REVIEW POINT	EVIDENCE / DECISION
[ ]	Duty conditions defined	
[ ]	Actual grade nominated	
[ ]	Shrinkage basis recorded	
[ ]	Regulatory evidence identified	
[ ]	Gate and venting reviewed	
[ ]	Cooling and steel reviewed	
[ ]	Drying requirements defined	
[ ]	Trial material controlled	
[ ]	Conditioning and testing agreed	