

Ceramic Injection Molding Material List

1. List of Ceramics

Ceramic Materials	Properties	Application Examples
Zirconia (ZrO ₂)	High strength, wear resistance	Dental implants, cutting tools
Alumina (Al ₂ O ₃)	High hardness, chemical stability	Electrical insulators, wear parts
Silicon Nitride (Si ₃ N ₄)	High thermal stability	Engine components, bearings
Silicon Carbide (SiC)	High thermal conductivity	Heat exchangers, nozzles
Titanium Diboride (TiB ₂)	Excellent hardness	Armor, cutting tools
Aluminum Nitride (AlN)	High thermal conductivity	Electronics, lighting
Boron Carbide (B ₄ C)	High hardness, lightweight	Abrasives, armor

Sialon	High strength, corrosion resistance	Welding, molten metal handling
Mullite (3Al ₂ O ₃ ·2SiO ₂)	Low thermal expansion	Furnace components, refractories
Cordierite (2MgO·2Al ₂ O ₃ ·5SiO ₂)	Low thermal expansion, shock resistance	Heat exchangers, kiln furniture

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2. List of Binders

Binders	Properties	Application Examples
Wax-based Binders	Low strength, easy removal	Prototyping, small batch production
Thermoplastic Polymers	High strength, good plasticity	Precision parts, complex shapes
Water-soluble Polymers	Easy removal, environmentally friendly	Biomedical applications, intricate designs

Polyethylene (PE)	Good flow properties, economical	General-purpose ceramics, consumer products
Polypropylene (PP)	High strength, good chemical resistance	Industrial components, wear parts
Polystyrene (PS)	Rigid, easy to mold	Decorative items, electrical components
Polyvinyl Alcohol (PVA)	Water-soluble, good film-forming properties	Intricate shapes, precision components
Polyethylene Glycol (PEG)	Water-soluble, good lubricity	Detailed parts, art and design items
Polyoxymethylene (POM)	High mechanical strength, thermal stability	Mechanical parts, high-wear applications
Polyamide (Nylon)	High strength, good thermal properties	Automotive parts, aerospace components

3. List of Additives

Additives	Properties	Application Examples
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Dispersants	Improve particle distribution	Uniform ceramics, complex shapes
Plasticizers	Increase flexibility, reduce brittleness	Intricate designs, thin-walled components
Anti-oxidants	Prevent oxidation	High-temperature applications
Lubricants	Reduce friction, ease ejection	High precision parts, smooth surfaces
Flow Modifiers	Enhance flow properties	Complex geometries, detailed parts
Deflocculants	Reduce viscosity, improve flow	Fluid ceramics, slip casting applications
Binders Enhancers	Improve binder performance	All types of ceramic molding
Filler Materials	Enhance strength, alter density	Structural components, decorative items
Colorants	Impart color	Decorative ceramics, artistic pieces

Anti-sintering Agents	Prevent sintering during processing	Large-scale production, uniform quality
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