



HighTemp Material Co., Ltd.

Industrial High Temperature Insulation &
Thermal Materials Supplier

HIGH TEMPERATURE MATERIALS SELECTION GUIDE

How to Choose the Right Insulation,
Sealing & Thermal Protection Materials



PCB Lamination



SMT Assembly



Semiconductor



Solar PV



Battery Pack



Energy Storage



EV



Industrial Furnace



High Performance



Reliable Protection



Thermal Stability



Safe & Compliant



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MATERIAL COMPARISON GUIDE

Compare key high temperature materials at a glance

Property	PTFE	PI (Polyimide)	PET	PPS	PEN	Silicone	Mica	Ceramic Fiber	Aerogel
Continuous Temperature	260°C	260~300°C	150°C	220°C	180°C	250°C	800°C	1260°C	650°C
Peak Temperature	300°C	400°C	180°C	240°C	200°C	300°C	1000°C	1400°C	800°C
Electrical Insulation	★★★★★	★★★★★	★★★★☆	★★★★★	★★★★☆	★★★★★	★★★★★	★★★★★	★★★★★
Chemical Resistance	★★★★★	★★★★☆	★★★☆☆	★★★★★	★★★★☆	★★★★☆	★★★★★	★★★★★	★★★★★
Flexibility	★★★★★	★★★★☆	★★★★★	★★★☆☆	★★★★☆	★★★★★	★★★☆☆	★★☆☆☆	★★★☆☆
Flame Resistance	★★★★★	★★★★★	★★★★☆	★★★★★	★★★★☆	★★★★★	★★★★★	★★★★★	★★★★★
Mechanical Strength	★★★☆☆	★★★★☆	★★★☆☆	★★★★☆	★★★☆☆	★★☆☆☆	★★★☆☆	★★☆☆☆	★★☆☆☆
Typical Applications	PCB Lamination, Semiconductor, Chemical Equipment	SMT, Flexible PCB, Electrical Insulation	Electrical Insulation, Label, Masking	Battery Module, Automotive, Industrial Insulation	Solar PV, Power Electronics, Insulation	Thermal Pad, Gaskets, Cushioning, Sealing	Heating Equipment, Electrical Insulation	Industrial Furnace, High-temp Insulation	Battery Fire Protection, Thermal Insulation



QUICK TIPS



Need excellent
chemical
resistance?
Choose PTFE.



Need flexible
electrical
insulation?
Choose PI.



Need high
mechanical
strength and
battery safety?
Choose PPS.



Need fire
protection and
thermal barrier?
**Choose Aerogel
or Mica.**



Need ultra-high
temperature
resistance?
**Choose Ceramic
Fiber.**



IMPORTANT NOTE

The data above are typical values for reference only. Actual performance may vary depending on material grade, processing method, thickness and service environment. Please test before final selection.



Need help selecting the right material?
Contact our engineering team for free
material recommendations.

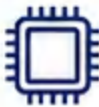
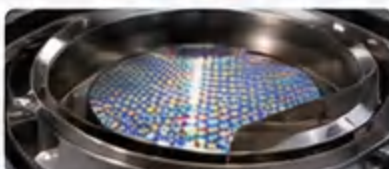


Contact Us



MATERIAL SELECTION BY APPLICATION

Find the most suitable materials for your specific industry and application needs.

INDUSTRY / APPLICATION	KEY REQUIREMENTS	RECOMMENDED MATERIALS	TYPICAL PRODUCTS
 PCB Lamination	- High temperature resistance - Dimensional stability - Excellent release performance	PET PTFE Silicone PI Tooling Plate	- PET Release Film - PTFE Film - Silicone Cushion Pad - Separator Plate / Tooling Plate 
 SMT Assembly	- High temperature masking - Electrical insulation - Clean removal, no residue	PI PET ESD PI Kapton Tape Silicone	- PI Film / Tape (Kapton®) - PET Tape - ESD PI Film - Silicone Pad 
 Semiconductor	- Ultra clean & low particles - Chemical resistance - High temperature stability	PTFE PI PPS PFA PEEK*	- PTFE Film / Sheet - PI Film / Tape - PPS Film / Sheet - PFA / PEEK* Components 
 Solar PV	- Weather resistance - Electrical insulation - UV & moisture resistance	PEN PET PI Silicone	- PEN Film - PET Film - PI Film - Silicone Encapsulation Pad 
 Battery Pack (Module)	- Electrical insulation - Flame retardant - Thermal management	PPS Silicone PET Aerogel Mica	- PPS Film / Sheet - Silicone Foam / Pad - Aerogel Blanket - Mica Sheet / Tape 
 Energy Storage (ESS)	- Fire protection - Thermal insulation - High temperature stability	Aerogel Mica Ceramic Fiber Silicone	- Aerogel Blanket / Board - Mica Sheet / Tape - Ceramic Fiber Blanket - Silicone Foam 
 Electric Vehicle (EV)	- High temperature insulation - Vibration resistance - Flame retardant	PPS PEN Silicone Mica	- PPS Film / Sheet - PEN Film - Silicone Foam / Pad - Mica Sheet 
 Industrial Furnace & Heating	- Ultra-high temperature - Thermal insulation - Excellent fire resistance	Ceramic Fiber High Silica Rock Wool Basalt Fiber	- Ceramic Fiber Blanket / Board - High Silica Cloth / Blanket - Rock Wool Board - Basalt Fiber Cloth 



APPLICATION SELECTION CHECKLIST



1. Operating Temperature

What is the continuous and peak temperature?



2. Electrical Insulation

What voltage and dielectric strength are required?



3. Chemical Exposure

Will the material contact chemicals, oils or solvents?



4. Flame Retardancy

Is fire protection or low smoke required?



5. Mechanical Performance

What strength, flexibility or wear resistance is needed?



6. Compression / Cushion

Does the application require compression or sealing?



7. Environment

Indoor or outdoor? UV, humidity, vibration, or aging conditions?



8. Cost & Service Life

What is the target lifespan and total cost of ownership?



Tip

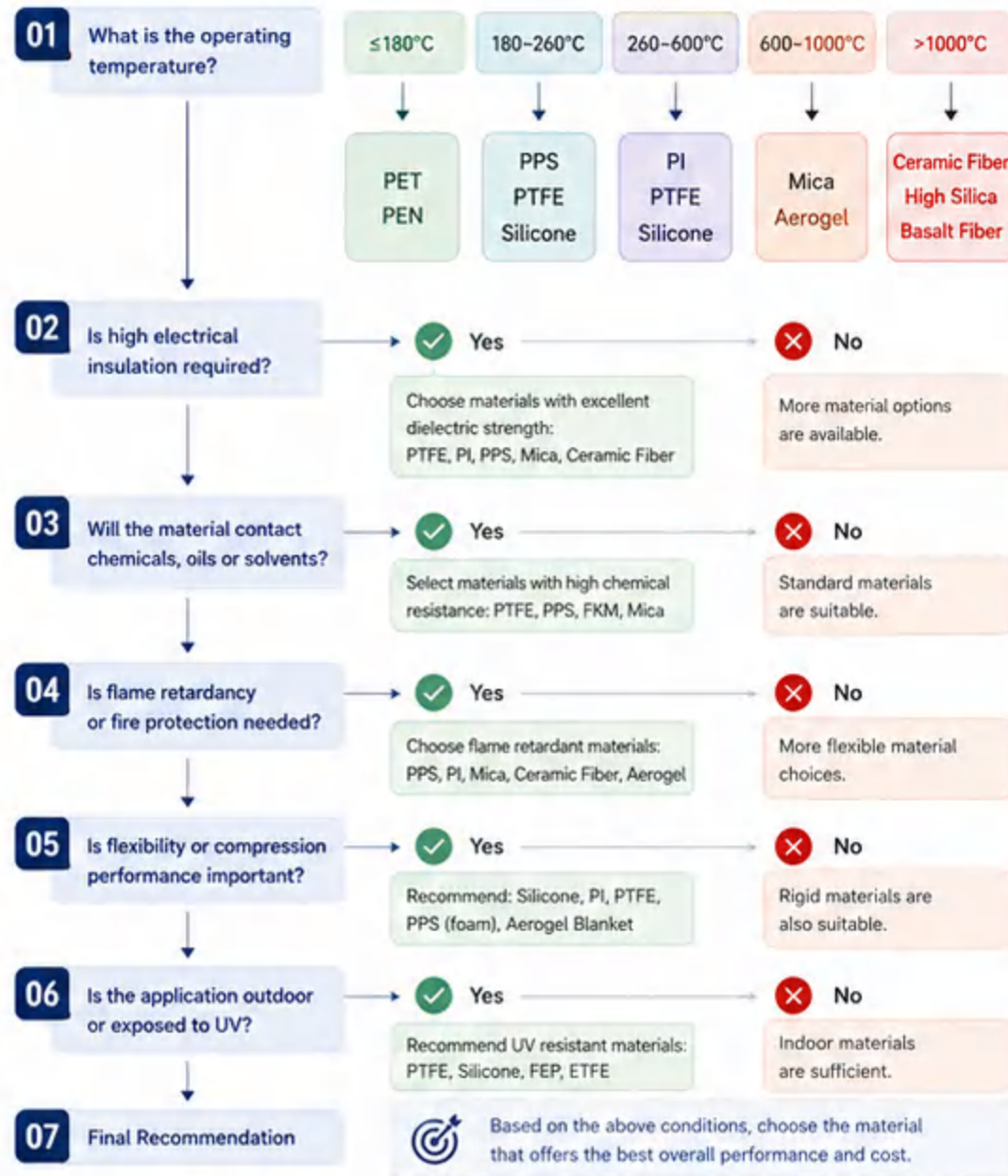
Always consider a safety margin for temperature and mechanical stress to ensure long-term reliability.





MATERIAL SELECTION FLOWCHART

Follow the steps below to identify the best material for your application.



COMMON SELECTION MISTAKES

Avoid these mistakes to ensure reliable performance and lower costs.

- | | |
|---|--|
| ✗ Using PET for long-term high temperature (>180°C). | ✓ Use PPS or PI for better high temperature stability. |
| ✗ Choosing Silicone when strong chemical resistance is required. | ✓ Use PTFE for superior chemical resistance. |
| ✗ Ignoring compression set in sealing or cushioning applications. | ✓ Select materials with low compression set: Silicone, FKM, PTFE. |
| ✗ Selecting material only by price instead of total cost of ownership. | ✓ Evaluate lifespan, reliability and maintenance cost. |
| ✗ Choosing the wrong release film, causing sticking or surface damage. | ✓ Match release film with proper release force and temperature. |
| ✗ Underestimating the importance of thickness and design. | ✓ Follow recommended thickness and consider mechanical stress. |



TEMPERATURE SELECTION REFERENCE



Operating Temperature (°C)	Recommended Materials
≤120°C	PET, PEN
120 ~ 180°C	PET, PEN, Silicone
180 ~ 220°C	PPS, PTFE, Silicone
220 ~ 260°C	PTFE, Silicone
260 ~ 400°C	PI, PTFE
400 ~ 800°C	Mica, Aerogel
800 ~ 1200°C	Mica, Ceramic Fiber
>1200°C	Ceramic Fiber, High Silica, Basalt Fiber

KEY SELECTION CONSIDERATIONS

- Operating Temperature**
Check both continuous and peak temperature.
- Electrical Performance**
Ensure dielectric strength and insulation reliability.
- Chemical Resistance**
Verify compatibility with chemicals, oils and solvents.
- Flame Retardancy**
Confirm UL rating or fire protection requirement.
- Mechanical Properties**
Consider strength, flexibility, wear and compression.
- Environmental Conditions**
UV, humidity, vibration, aging and outdoor exposure.
- Cost & Service Life**
Balance performance, cost and total lifespan.



MATERIAL SAFETY GUIDELINES

- ✓ Always follow the material datasheet and safety instructions.
- ✓ Ensure proper ventilation when processing materials.
- ✓ Store materials in clean, dry and cool environment.
- ✓ Keep away from direct sunlight and heat sources.
- ✓ Dispose of materials according to local regulations.



IMPORTANT NOTE

The information in this guide is for reference only. Actual performance may vary depending on grade, thickness, processing method and service environment. Please test before final selection and confirm with our engineers.



NEED HELP SELECTING THE RIGHT MATERIAL?

Contact our engineering team for free material recommendations and custom converting solutions.



Website



WhatsApp



Reliable Protection



Thermal Stability



High Performance



Safe & Compliant



Custom Solutions



www.hightempmaterial.com



HIGH TEMPERATURE MATERIALS SELECTION GUIDE

The Right Material. The Right Performance. The Right Solution.

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Product Portfolio
& Contact



PRODUCT PORTFOLIO

Comprehensive range of high performance materials for demanding industrial applications.



PTFE MATERIALS

- PTFE Film / Sheet / Tape
- PTFE Coated Fiberglass
- ePTFE Membrane
- Die Cut PTFE Parts



PET FILMS

- PET Release Film
- PET Insulation Film
- Adhesive PET Tape
- Die Cut PET Parts



SILICONE MATERIALS

- Silicone Sheet / Foam
- Silicone Coated Fiberglass
- Thermal Conductive Pads
- Silicone Gaskets



FIREPROOF MATERIALS

- Ceramic Fiber Products
- High Silica Fabric
- Basalt Fiber Products
- Rock Wool / Boards



OEM FABRICATION

- Precision Die Cutting
- Slitting & Rewinding
- CNC Cutting
- Laminating & Coating



THE RIGHT MATERIAL. THE RIGHT APPLICATION.
MAXIMIZE PERFORMANCE AND RELIABILITY.



OEM & CUSTOM SOLUTIONS

Precision converting & fabrication to meet your exact requirements.



PRECISION SLITTING

High-precision slitting with tight tolerance and clean edge.



DIE CUTTING

Custom shapes, gaskets, pads and components by advanced die cutting.



LAMINATING

Multi-layer laminating with adhesive or non-adhesive solutions.



CNC CUTTING

High accuracy CNC cutting for technical parts and special shapes.



ADHESIVE COATING

Uniform adhesive coating for tapes, films and functional materials.



CUSTOM FABRICATION

From prototyping to mass production, we support your unique needs.



OUR ADVANTAGES



Premium Quality



High Temp Performance



Reliable & Consistent



Custom Solutions



Expert Support



CONTACT US

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Website



WhatsApp



Serving customers globally with high performance materials and custom solutions.



PCB Lamination



SMT Assembly



Semiconductor



Solar PV



Battery Pack



Energy Storage



EV



Industrial Furnace