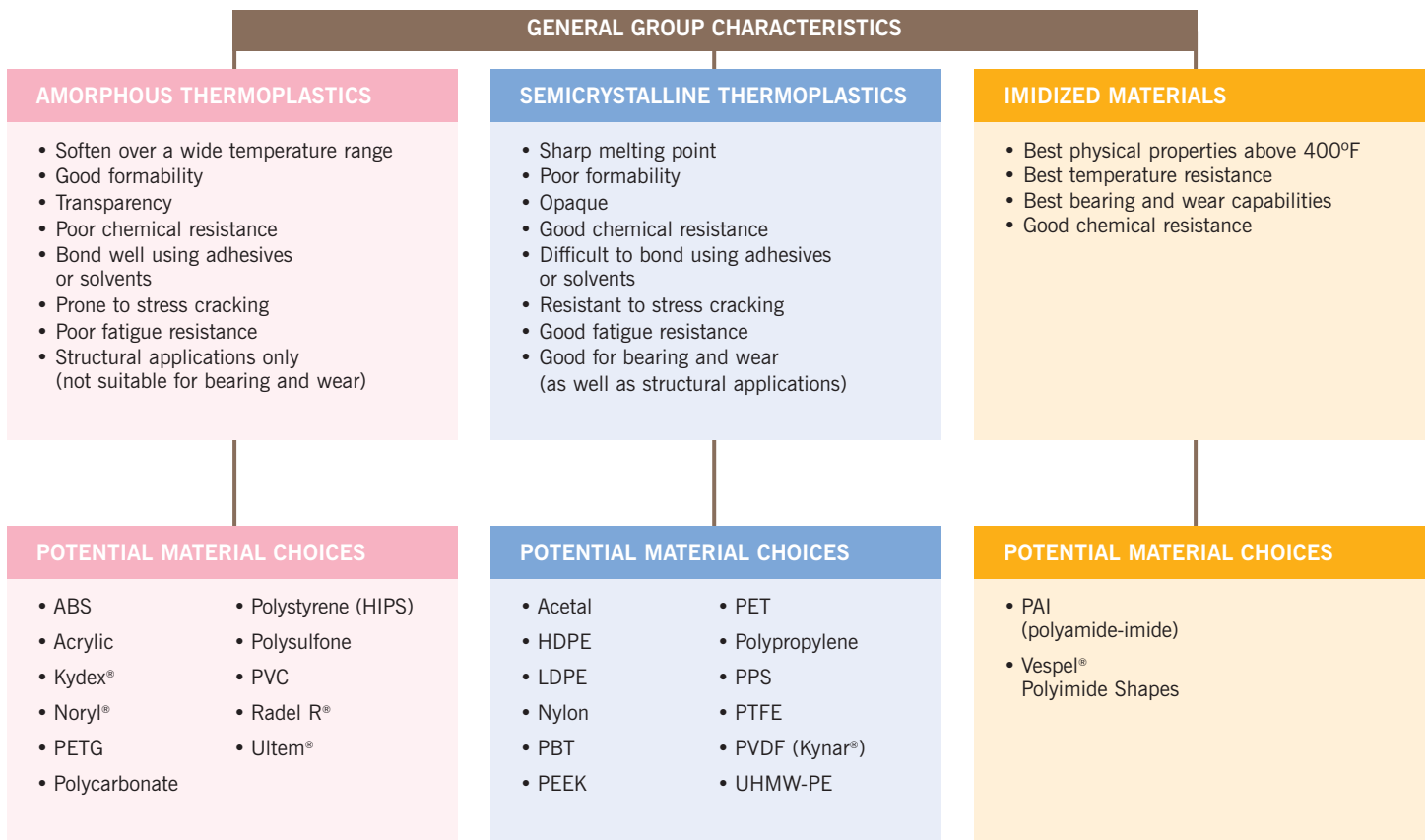


MATERIAL SELECTION GUIDE

1. GET IN THE RIGHT GROUP WHAT IS MOST IMPORTANT TO THE APPLICATION?

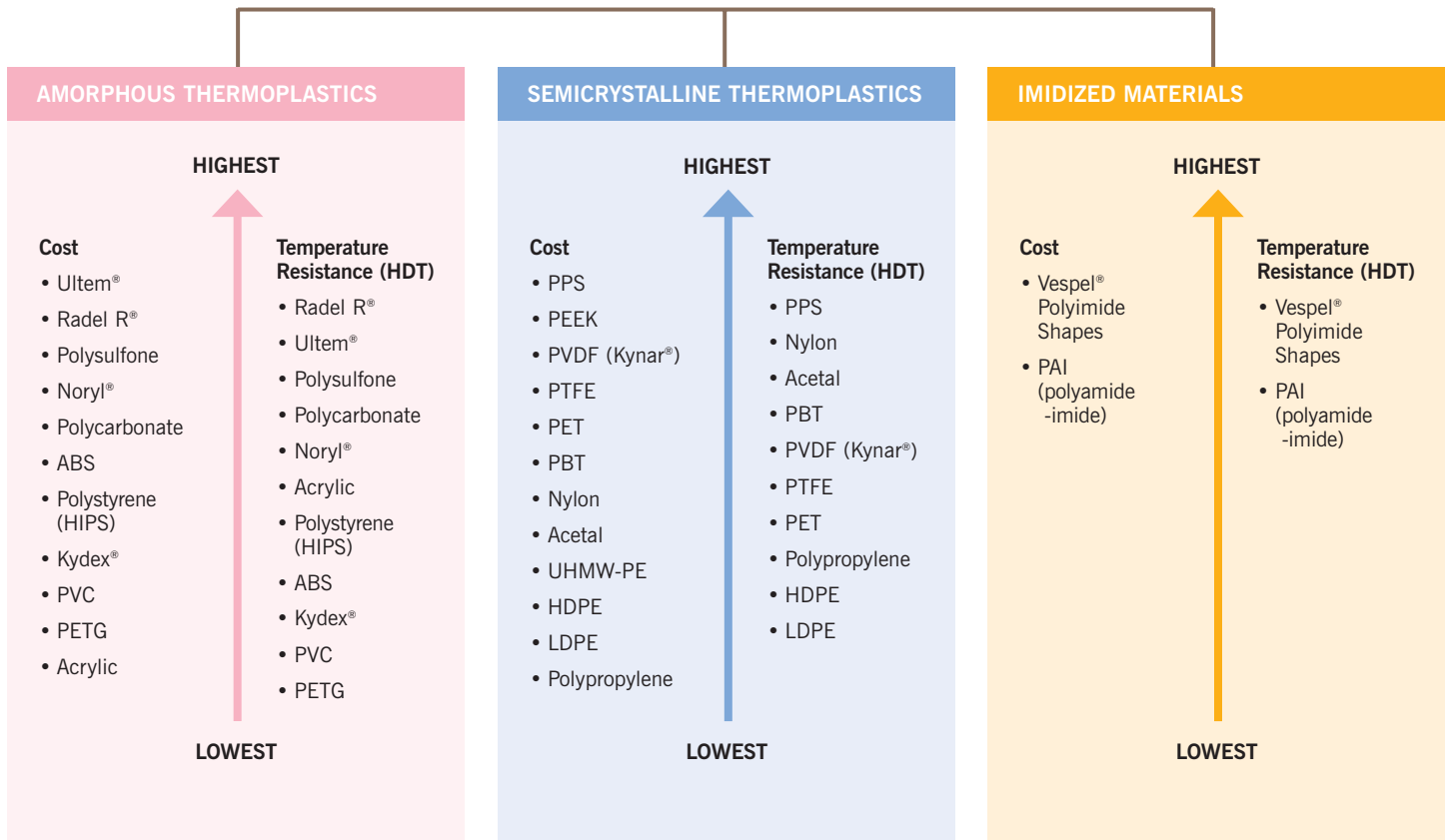


This selector guide is intended to help you review the needs of your particular application and determine a few material candidates that can then be tested.

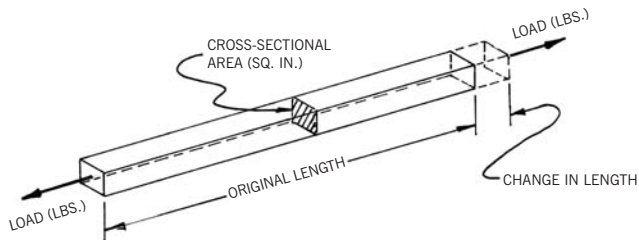
Although the information and statements herein are believed to be accurate, no guarantee of their accuracy is made. The statements and information are included for reference purposes only and are not intended and should not be construed as either a warranty of any type or representations applicable to the particular application, use or design of the buyer or user of the goods. In every case, we recommend that the purchaser or user before using or buying any product perform their own tests and make their own decision to determine to their own satisfaction whether the product is of acceptable quality, type and design and is suitable for the particular purposes under their own operating conditions.

MATERIAL SELECTION GUIDE

2. CHOOSE THE BEST FAMILY IS TEMPERATURE A FACTOR? HOW CRITICAL IS COST?



MATERIAL SELECTION GUIDE



3. COMPARE THE MECHANICAL PROPERTIES IS TENSILE STRENGTH (RESISTANCE TO BEING PULLED APART) IMPORTANT?

AMORPHOUS THERMOPLASTICS

Tensile strength - pull apart (psi)

• Ultem®	15,200
• Polysulfone	10,200
• Radel R®	10,100
• Acrylic	10,000
• Noryl®	9,600
• Polycarbonate	9,500
• PETG	7,700
• PVC	7,500
• Kydex®	6,100
• ABS	4,100
• Polystyrene (HIPS)	3,500

SEMICRYSTALLINE THERMOPLASTICS

Tensile strength - pull apart (psi)

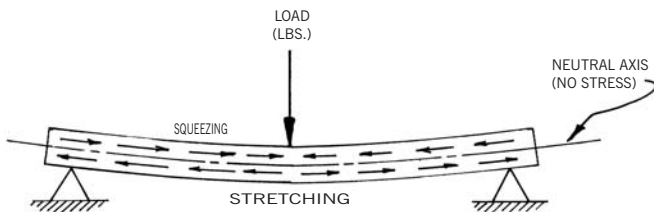
• PEEK	14,000
• Nylon (6 cast)	10,000-13,500
• PPS	12,500
• Nylon (6/6 extruded)	12,400
• PET	11,500
• Acetal (Homopolymer)	10,000
• Acetal (Copolymer)	9,800
• PBT	8,690
• PVDF (Kynar®)	7,800
• Polypropylene (Homopolymer)	5,400
• HDPE	4,000
• Polypropylene (Copolymer)	3,800
• UHMW-PE	3,100
• PTFE	1,500-3,000
• LDPE	1,400

IMIDIZED MATERIALS

Tensile strength - pull apart (psi)

• PAI (polyamide-imide)	21,000
• Vespel® Polyimide SP-1	12,500
• Vespel® Polyimide SP-21	9,500
• Vespel® Polyimide SP-3	8,200
• Vespel® Polyimide SP-22	7,500
• Vespel® Polyimide SP-211	6,500

MATERIAL SELECTION GUIDE



4. COMPARE THE MECHANICAL PROPERTIES IS FLEXURAL MODULUS (BENDING STIFFNESS) IMPORTANT?

AMORPHOUS THERMOPLASTICS

Flexural modulus - stiffness (psi)

• Ultem® (30% glass-filled)	1,300,000
• Polycarbonate (20% glass-filled)	800,000
• PVC	481,000
• Ultem®	480,000
• Acrylic	480,000
• Polysulfone	390,000
• Noryl®	370,000
• Radel R®	350,000
• Polycarbonate	345,000
• Kydex®	335,000
• Polystyrene (HIPS)	310,000
• PETG	310,000
• ABS	304,000

SEMICRYSTALLINE THERMOPLASTICS

Flexural modulus - stiffness (psi)

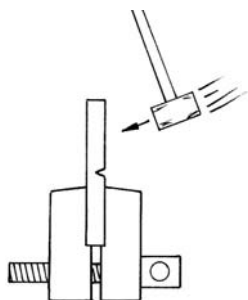
• PPS	600,000
• PEEK	590,000
• Nylon (6 cast)	420,000-500,000
• Acetal (Homopolymer)	420,000
• Nylon (6/6 extruded)	410,000
• PET	400,000
• Acetal (Copolymer)	370,000
• PBT	330,000
• PVDF (Kynar®)	310,000
• Polypropylene (Homopolymer)	225,000
• Polypropylene (Copolymer)	215,000
• HDPE	200,000
• UHMW-PE	110,000
• PTFE	72,000
• LDPE	30,000

IMIDIZED MATERIALS

Flexural modulus - stiffness (psi)

• PAI (polyamide-imide)	711,000
• Vespel® Polyimide SP-22	700,000
• Vespel® Polyimide SP-21	550,000
• Vespel® Polyimide SP-3	475,000
• Vespel® Polyimide SP-211	450,000
• Vespel® Polyimide SP-1	450,000

MATERIAL SELECTION GUIDE

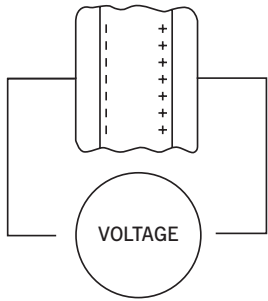


5. COMPARE THE MECHANICAL PROPERTIES IS IZOD IMPACT (TOUGHNESS) IMPORTANT?

AMORPHOUS THERMOPLASTICS	SEMICRYSTALLINE THERMOPLASTICS	IMIDIZED MATERIALS
Izod impact (notched) - toughness (ft-lbs/in) <ul style="list-style-type: none"> Kydex® 18 Polycarbonate 12.0-16.0 Radel R® 13 ABS 7.7 Noryl® 3.5 Polystyrene (HIPS) 2.0 PETG 1.7 Polysulfone 1.3 Ultem® 1.0 PVC 1.0 Acrylic 0.4 	Izod impact (notched) - toughness (ft-lbs/in) <ul style="list-style-type: none"> LDPE no break UHMW-PE 18.0 Polypropylene (Copolymer) 12.5 PTFE 3.5 PVDF (Kynar®) 3.0 PEEK 1.6 PBT 1.5 Acetal (Homopolymer) 1.5 Polypropylene (Homopolymer) 1.2 Nylon (6/6 extruded) 1.2 Acetal (Copolymer) 1.0 Nylon (6 cast) 0.7-0.9 PET 0.7 PPS 0.5 	Izod impact (notched) - toughness (ft-lbs/in) <ul style="list-style-type: none"> PAI (polyamide-imide) 2.3 Vespel® Polyimide SP-21 0.8 Vespel® Polyimide SP-1 0.8 Vespel® Polyimide SP-3 0.4

[CLICK, LEARN MORE »](#)

MATERIAL SELECTION GUIDE



6. COMPARE THE PROPERTIES IS DIELECTRIC STRENGTH (ELECTRICAL INSULATION) IMPORTANT?

AMORPHOUS THERMOPLASTICS

Dielectric strength - insulation (v/mil)

• Ultem®	830
• PVC	544
• Kydex®	514
• Noryl®	500
• Acrylic	430
• Polysulfone	425
• PETG	410
• Polycarbonate	380
• Radel R®	360

SEMICRYSTALLINE THERMOPLASTICS

Dielectric strength - insulation (v/mil)

• Nylon (6 cast)	500-600
• Acetal (Homopolymer)	500
• Acetal (Copolymer)	500
• PTFE	400-500
• PEEK	480
• PPS	450
• PET	400
• PBT	400
• Nylon (6/6 extruded)	300-400
• PVDF (Kynar®)	280

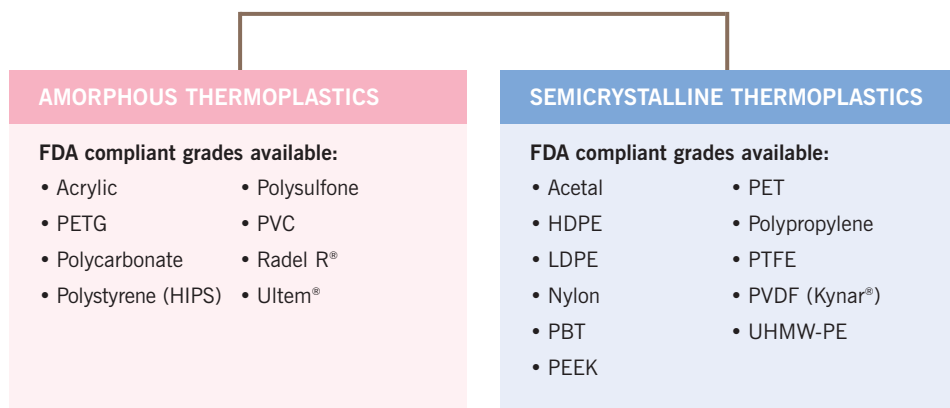
IMIDIZED MATERIALS

Dielectric strength - insulation (v/mil)

• PAI (polyamide-imide)	600
• Vespel® Polyimide SP-1	560

MATERIAL SELECTION GUIDE

7. THINK ABOUT THE APPLICATION - IS FDA COMPLIANCE IMPORTANT?



The virgin, natural, unfilled formulations of the sheet, rod, tube, and film products listed here are available from Curbell Plastics, Inc. in grades that comply with one or more of the FDA's guidelines for direct food contact at room temperature.

It is important to specify FDA compliant material at the time of the order to ensure that FDA compliant material is provided.

8. THINK ABOUT THE APPLICATION - IS CHEMICAL RESISTANCE IMPORTANT?

