RIGID POLYURETHANES | R01

priorityprototypes

COLOR (MIXED)
White

NOTABLE FOR
Medium Strength
Low Viscosity
High Heat Deflection

COMPARABLE TO
General Purpose Plastic
ABS
PC

COMMON USES
Consumer Electronics
Scientific Instruments
Low Volume Production

MECHANICAL PROPERTIES	TEST METHOD	UNIT (ENGLISH)
Cured Hardness, Shore D	ASTM D2240	85
Density, lb./cu. Inch	ASTM D792	0.0417
Tensile Strength, psi	ASTM D638	10,010
Elongation at Break, %	ASTM D638	21.60
Tensile Modulus, psi	ASTM D638	371,155
Flexural Strength, psi	ASTM D790	15,574
Flexural Modulus, psi	ASTM D790	386,612
Compressive Strength, psi	ASTM D695	11,943
Compressive Modulus, psi	ASTM D659	357,510
Izod Impact Strength of Notch, ft.lbs./inch	ASTM D256	2.1
Glass Transition Temperature, DMA Tg (onset), °F	ASTM D4065	213
Glass Transition Temperature, DMA E' (onset), °F	ASTM D4065	193
Heat Deflection Temperature @ 64 psi, °F	ASTM D648	190
Coefficient of Thermal Expansion in/in/ F	ASTM D696	6.09 x 10 ^-5

RIGID POLYURETHANES | R02

priorityprototypes

COLOR (MIXED)
Black

NOTABLE FOR
Flexible in thin wall
Rigid in thick wall
Replicate snaps

COMPARABLE TO
HDPE

COMMON USES
Household Appliances
Automotive Panels
Sports Equipment

MECHANICAL PROPERTIES	TEST METHOD	UNIT (ENGLISH)
Cured Hardness, Shore D	ASTM D2240	80
Density, lb./cu. Inch	ASTM D792	0.0407
Tensile Strength, psi	ASTM D638	7,170
Elongation at Break, %	ASTM D638	55.90
Tensile Modulus, psi	ASTM D638	221,156
Flexural Strength, psi	ASTM D790	9,509
Flexural Modulus, psi	ASTM D790	236,132
Compressive Strength, psi	ASTM D695	8,084
Compressive Modulus, psi	ASTM D659	251,484
Izod Impact Strength of Notch, ft.lbs./inch	ASTM D256	2.64
Glass Transition Temperature, DMA Tg (onset), °F	ASTM D4065	232
Glass Transition Temperature, DMA E' (onset), °F	N/A	N/A
Heat Deflection Temperature @ 64 psi, °F	N/A	N/A
Coefficient of Thermal Expansion in/in/ F	N/A	N/A

*Note: Mechanical properties taken when cured 7 days @ Ambient temperature. Mechanical properties change as curing time and temperature change.

RIGID POLYURETHANES | R03

priorityprototypes

COLOR (MIXED)
Clear

NOTABLE FOR
High strength
Easy to polish
UV Persistence

COMPARABLE TO
Acrylic/Polycarbonate

COMMON USES
Displays
Optical Components
Screens

MECHANICAL PROPERTIES	TEST METHOD	UNIT (ENGLISH)
Cured Hardness, Shore D	D-2240	87
Density, lb./cu. Inch	N/A	0.0397
Tensile Strength, psi	D-638	10,152
Elongation at Break, %	N/A	N/A
Tensile Modulus, psi	N/A	N/A
Flexural Strength, psi	D-790	11,603
Flexural Modulus, psi	D-790	N/A
Compressive Strength, psi	D-695	N/A
Compressive Modulus, psi	N/A	N/A
Izod Impact Strength of Notch, ft.lbs./inch	N/A	29.9
Glass Transition Temperature, DMA Tg (onset), °F	N/A	N/A
Glass Transition Temperature, DMA E' (onset), °F	N/A	N/A
Heat Deflection Temperature @ 64 psi, °F	N/A	221
Coefficient of Thermal Expansion in/in/ F	N/A	N/A

*Note: The above properties are average values measured on specimens after post curing 2 hours at 158°F, plus 16 hours at 212°F, plus 24 hours at room temperature.

RIGID POLYURETHANES | R04

priorityprototypes

COLOR (MIXED)
White

NOTABLE FOR
Low shrink
Good for larger parts
UL 94-VO listed flammability

COMPARABLE TO
Structural Foam

COMMON USES
Electronic Enclosures
Metal Housings
Fire Retardant Parts

MECHANICAL PROPERTIES	TEST METHOD	UNIT (ENGLISH)
Cured Hardness, Shore D	ASTM D2240-04e1	80 ± 2
Density, lb./cu. Inch	ASTM D792	0.0469
Tensile Strength, psi	ASTM D638-03	6,117
Elongation at Break, %	ASTM D638-03	21
Tensile Modulus, psi	ASTM D638-03	250,000
Flexural Strength, psi	ASTM D790-03	10,126
Flexural Modulus, psi	ASTM D790-03	281,000
Compressive Strength, psi	N/A	N/A
Compressive Modulus, psi	N/A	N/A
Izod Impact Strength of Notch, ft.lbs./inch	ASTM D256-05	0.58
Glass Transition Temperature, DMA Tg (onset), °F	N/A	N/A
Glass Transition Temperature, DMA E' (onset), °F	N/A	N/A
Heat Deflection Temperature @ 66 psi, °F	ASTM D648-04	186
Coefficient of Thermal Expansion in/in/ F	N/A	N/A

RIGID POLYURETHANES | R05

priorityprototypes

COLOR (MIXED)
Clear Amber

NOTABLE FOR
Flexible in thin wall
Rigid in thick wall
Abrasion Resistant

COMPARABLE TO
Nylon 6 - Thick
LDPE - Thin

COMMON USES
Foundry Tooling
High Impact, Semi Rigid
Sporting Goods

MECHANICAL PROPERTIES	TEST METHOD	UNIT (ENGLISH)
Cured Hardness, Shore D	ASTM D2240-04	60 ± 5
Density, lb./cu. Inch	ASTM D792-00	0.0413
Tensile Strength, psi	ASTM D412-98a(2002)	4,798
Elongation at Break, %	ASTM D638-98a(2002)	416
Tensile Modulus, psi	ASTM D412-98a(2002)	40,682
Flexural Strength, psi	ASTM D790	1,752
Flexural Modulus, psi	ASTM D790	40,500
Compressive Strength, psi	N/A	N/A
Compressive Modulus, psi	N/A	N/A
Izod Impact Strength of Notch, ft.lbs./inch	ASTM D256-05	>16
Glass Transition Temperature, DMA Tg (onset), °F	N/A	N/A
Glass Transition Temperature, DMA E' (onset), °F	N/A	N/A
Heat Deflection Temperature @ 64 psi, °F	N/A	N/A
Coefficient of Thermal Expansion in/in/ F	N/A	N/A

*Note: Mechanical properties taken when cured 1-3 hours @ Room Temperature then 16hours at 180°F. Mechanical properties change as curing time and temperature change.

RIGID POLYURETHANES | R06

priorityprototypes

COLOR (MIXED)
Clear

NOTABLE FOR
Clear
Fast cycle time
Good for color matching

COMPARABLE TO
Polycarbonate

COMMON USES
Encapsulation
Lenses
UV Resistant Parts

MECHANICAL PROPERTIES	TEST METHOD	UNIT (ENGLISH)
Cured Hardness, Shore D	ASTM D2240	80
Density, lb./cu. Inch	N/A	N/A
Tensile Strength, psi	ASTM D638	3,500
Elongation at Break, %	ASTM D638	10
Tensile Modulus, psi	ASTM D638	86,240
Flexural Strength, psi	ASTM D790	5,390
Flexural Modulus, psi	ASTM D790	183,200
Compressive Strength, psi	ASTM D695	4,200
Compressive Modulus, psi	ASTM D659	44,000
Izod Impact Strength of Notch, ft.lbs./inch	N/A	N/A
Glass Transition Temperature, DMA Tg (onset), °F	N/A	N/A
Glass Transition Temperature, DMA E' (onset), °F	N/A	N/A
Heat Deflection Temperature @ 64 psi, °F	N/A	N/A
Coefficient of Thermal Expansion in/in/ F	N/A	N/A

*Note: Mechanical properties taken when cured 90min @ 73°F. Mechanical properties change as curing time and temperature change.

RIGID POLYURETHANES | R07

priorityprototypes

COLOR (MIXED)
Black

NOTABLE FOR
Very fast cycle times
UL 94-V2
Very gentile on molds

COMPARABLE TO
Polystyrene

COMMON USES
Consumer Electronics
Low Run Production
Household Devices

MECHANICAL PROPERTIES	TEST METHOD	UNIT (ENGLISH)
Cured Hardness, Shore D	ASTM D-2240	80 ± 5
Density, lb./cu. Inch	N/A	0.048
Tensile Strength, psi	ASTM D-638	6,200
Elongation at Break, %	ASTM D-638	7
Tensile Modulus, psi	N/A	N/A
Flexural Strength, psi	ASTM D-790	8,750
Flexural Modulus, psi	ASTM D-790	215,225
Compressive Strength, psi	ASTM D-695	N/A
Compressive Modulus, psi	ASTM D-695	N/A
Izod Impact Strength of Notch, ft.lbs./inch	ASTM D-256	0.7
Glass Transition Temperature, DMA Tg (onset), °F	N/A	N/A
Glass Transition Temperature, DMA E' (onset), °F	N/A	N/A
Heat Deflection Temperature @ 66 psi, °F	ASTM D-648	195
Coefficient of Thermal Expansion in/in/ F	N/A	N/A