Polyurethane Elastomer

Tech Sheet

Polyurethane Elastomers are a versatile material which can be formulated a number of ways to produce **strong, stiff, flexible, tough, resilient and durable** parts.

Because of their elastic properties, most polyurethane elastomers feature long chains of polymers held together by fairly weak inter-molecular forces. These long chains respond well to stress and can easily return to their original form without tearing or breaking.

Elastomers produce some of the most resilient and damage-resistant molded parts. They are **extremely resistant** to a number of potentially deforming factors including **heat, oils, chemicals, abrasion, impacts, extreme weather conditions, and natural wear and tear.**

Elastomers are an excellent choice for parts which will frequently experience high speeds, such as the tires and body panels of automobiles and machines. Elastomeric parts will remain strong, functional and even aesthetically pleasing for years and years of sustained use.

Elastomers are highly moldable, stable, and not tacky, allowing for the production of large or complex parts. Elastomeric parts can be highly detailed and can be made to the most particular of customer specifications.

CAPABILITIES			MATERIAL CAPABILITIES			PROCESS CAPABILITIES				TOOLING	
Resinsd	Resin Types	Filler Material	Part Size Range	Annual Volume	Cycle Time	Paint	Inserts	Molded In Features	Specific Gravity	Mold Cost	Mold Materials
Thermoset	Polyurethane	Glass, Mineral	3' - 9' Largest Dimension	1k - 50k	3 - 10 min	IN-Mold	YES	YES	0.65 - 1.12 Low - Med	$25k - $200k	Steel Epoxy Aluminum Nickel

Material Specifications

Flexural Modulus @ 73°F (psi) ..... 52,000 - 155,000 psi
Specific Gravity ..... 0.65 - 1.12
Part Density (pcf) ..... 65 - 75
Notched Izod (ft-lb/in) ..... 5, 7 or 11
Tensile Strength (psi) ..... 2500 - 4100 psi
Elongation at Break (%) ..... 50 - 250
CLTE x $10E^{6}$ ..... 76, 85 or 110
Hardness (Shore D) ..... 44 - 73
% Reinforcement ..... 0 - 20%

Part Design

Wall Thickness "t" (in) ..... 0.12" - 0.236"
Rib Thickness (at base) ..... 0.75" t
Fillets / Radius (in) ..... 1/16"
Part Draft (degrees) ..... 1.5° - 5°
Molded Holes / Features ..... Yes
Undercut / Tool Action ..... Yes
Snap Fits ..... Yes
Insert Molding / Encapsulation ..... Yes

Applications

Fenders, Fascias, Trim, Panels, Doors, Chassis Farings, Window Surrounds

Process Capabilities

Part Size Range ..... Largest Dimension 3' - 9'
Part Depth ..... 45"
Annual Volume ..... 1k - 50k
Cycle Time ..... 3 - 10 minutes

Tooling

Mold Material ..... Nickel Shell | Aluminum
Gating Style ..... Fan
Shot Time (seconds) ..... 1 - 1.5 seconds
Mold Pressure (psi) ..... 100 psi
Mold Temperature (°F) ..... 140° - 170°

Surface Finish

Grained Surface ..... Yes
High Gloss - Class A Top Coat Paint ..... Yes
High Gloss - Class A IN-Mold Paint ..... Yes

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