

## ChronoFlex AL™ | Aliphatic Polycarbonate-based Urethanes

### Product Description

ChronoFlex AL is a family of Biodurable aliphatic polycarbonate-based thermoplastic urethanes designed to overcome surface degradation such as stress-induced micro fissures.

With a long history of reliable performance in both long- and short-term devices, this medical grade polymer has the versatility to be used across a broad range of applicational areas ranging from oncology and neurology to cardiovascular disease management.

These ether-free polyurethane elastomers are biostable and display a low modulus of elasticity, excellent solvent resistance and limited softening in-vivo and are adaptable to most standard manufacturing processes.

ChronoFlex AL products are available in harnesses ranging from 75 Shore A to 75 Shore D.

General	<b>Key Features</b>	<ul style="list-style-type: none"> <li>• Biodurable &amp; Biocompatible</li> <li>• USP Class VI</li> <li>• Excellent Chemical Resistance</li> <li>• Low Modulus of Elasticity</li> <li>• Inherent Material Strength</li> </ul>	<ul style="list-style-type: none"> <li>• Animal-Free Origin Certified</li> <li>• Tailored To Meet Mechanical Specifications</li> <li>• Reliable Performance in Long- And Short-Term Implantable Devices</li> </ul>
	<b>Forms</b>	<ul style="list-style-type: none"> <li>• Pellet</li> <li>• Solution</li> </ul>	
	<b>Processing Methods</b>	<ul style="list-style-type: none"> <li>• Extrusion</li> <li>• Injection and Blow molding</li> <li>• Dip Coating</li> <li>• Solution casting</li> <li>• Film formation</li> <li>• Solvent coating methods</li> </ul>	
	<b>Common Applications</b>	<ul style="list-style-type: none"> <li>• Cardiology</li> <li>• Surgery</li> <li>• Endoscopic</li> <li>• Urology</li> <li>• Nephrology</li> <li>• Neurology</li> </ul>	<ul style="list-style-type: none"> <li>• Orthopedics</li> <li>• Drug Delivery</li> <li>• Diabetes Management</li> <li>• Gastroenterology</li> <li>• Ear/Nose/Throat</li> </ul>

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## Technical Properties

Mechanical Characteristic Range	ChronoFlex AL™ (typical example ranges shown)*			ASTM Standard	
	<b>Durometer Range Available</b>	75 Shore A – 75 Shore D			D2240
	<b>Specific Gravity</b>	1.10 – 1.40			D792
	<b>Melt Flow</b>	2-26 g/10 min   205° C/ 3.26 kg			D1238
	<b>Durometer</b>	75A – B20*	55D	75D	ASTM
	<b>Ultimate Tensile Strength (psi)</b>	8000 - 10000	5000 - 10000	9000 - 12000	
	<b>Tensile (psi)</b>				
	<b>@ 50% elongation</b>	450 – 650	1500 - 1800	5500 - 7500	D638
	<b>@ 100% elongation</b>	650 – 850	1800 - 2200	6000 - 8000	D638
	<b>@ 200% elongation</b>	1000 - 1450	2800 - 4200	-	D638
	<b>@ 300% elongation</b>	1800 - 2400	4200 - 10000	-	D638
	<b>Ultimate Elongation (%)</b>	400 - 600	200-400	100 - 300	D638

\*Data provided herein is meant to show a general range for the ChronoFlex AL product lines; these properties can be tailored to meet specific values based on customer requirements.

Biocompatibility Testing	TEST	USP CLASS VI	ISO GUIDELINE
	<b>MEM Elution</b>		Meets ISO 10993-5 guidelines
	<b>AGAR Overlay</b>		Meets ISO 10993-5 guidelines
	<b>Systemic Injection Test</b>	Meets Class VI guidelines	Meets ISO 10993-11 guidelines
	<b>Intracutaneous Injection Test</b>	Meets Class VI guidelines	Meets ISO 10993-10 guidelines
	<b>Intramuscular Implantation (macro)</b>	Meets Class VI guidelines	
	<b>Phthalate Free</b>		Does not contain or in contact with DEHP
	<b>Animal-Free Origin Certified</b>		BSE/TSE free

### Pre-Processing Recommendations:

ChronoFlex AL processing can be optimized by drying to a moisture content equal to or less than 0.05% by weight prior to melt processing.

Typically, the pellets must be dried for 3-4 hours with a dryer inlet air temperature of 180°F +/- 20°F. We recommend a machine-mounted desiccant-type hopper dryer, capable of reaching and maintaining a dew point of -40°F. If dry times are in excess of 8-10 hours, a hopper dryer temperature of 120-150°F is usually sufficient to achieve an optimal moisture content.