Technical Data Sheet

MITSUBISHI CHEMICAL GROUP

HydroThane AL/AR™

| Hydrophilic Thermoplastic Elastomers

Product Description

HydroThane AL/AR is a medical-grade hydrophilic thermoplastic polyurethane elastomer, ranging in water content rates from 5% to 25%. This unique extrudable hydrophilic product line was designed to provide maximum physical properties for use in extruded or injection molded components, while allowing for consistent single-step surface lubricity characteristics and a low coefficient of friction.

Available in aliphatic (AL) and aromatic (AR) versions, these elastomers have the ability to absorb water while maintaining high tensile strength and high elongation, resulting in a permanently lubricious polymer.

HydroThane AL/AR can be processed using conventional extrusion or injection molding equipment.

Due to inherent hydrophilicity, the material should be sealed and stored in a cool, dry place and are available in hardness of 80 and 93 Shore A.

General	**Key Features**	• Hydrophilic • Superior Elongation • High Tensile Strength	• Wide Range of Water Content • Animal-Free Origin Certified
	Forms	• Pellet	
	Processing Methods	• Extrusion • Injection Molding • Blow Molding	
	Common Applications	• Cardiology • Surgery • Endoscopic • Urology	• Nephrology • Neurology • Gastroenterology • Reproductive Health

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FDA Master Files. It is the responsibility of the user to establish safety with the FDA for their specific medical device.

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Technical Properties

Mechanical Characteristics*	HydroThane AL/AR™			ASTM Standard
	Durometer Range Available	80 Shore A – 93 Shore A		D2240
	Water Content	5.0 – 25.0% by weight		
	Melt Flow (g/10 min)	2 – 26 g/10 min | 190°- 205°C/3.26 kg		D1238
	Example Product	93A		
		Hydrated	Non-Hydrated	
	Ultimate Tensile Strength (psi)	2000 – 3000	4800 – 5500	D638
	Tensile Strength (psi)			
	@50% elongation	600 – 800	800 – 1050	
	@100% elongation	900 – 1200	1200 – 1500	
	@200% elongation	1300 – 1700	1800 – 2200	
	@300% elongation	1500 – 2100	2400 – 2800	
	Ultimate Elongation (%)	450 – 650	550 – 650	

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

Biocompatibility testing:

Tests: MEM Elution, USP Class VI

The HydroThane product line was pre-assessed for biocompatibility by testing representative grades in the product line. These grades were tested using a MEM Elution test and were considered non-cytotoxic. Additionally, these grades were tested for USP Class VI, and the test articles were determined to meet the requirements of the USP guidelines for Class VI Plastics – 70 ° C. Please reach out for more specific information.

Pre-Processing Recommendations:

HydroThane 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 180ºF +/- 20ºF. We recommend a machine-mounted desiccant-type hopper dryer, capable of reaching and maintaining a dew point of -40ºF. If dry times are in excess of 8-10 hours, a hopper dryer temperature of 120-150ºF is usually sufficient to achieve optimal moisture content.

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