



**QUADRA**  
Quadrathane™ ARC  
AROMATIC POLYCARBONATE



**BIOMERICS**

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# TECHNICAL DATA & PROCESS GUIDE

## PRODUCT

Quadrathane ARC

## CHEMISTRY

Aromatic Polycarbonate TPU

## APPLICATIONS

Extrusion, Injection Molding,  
Solution

## CHARACTERISTICS

Superior biocompatibility, superior chemical resistance, superior oxidative stability, hemocompatible, toughness.



## QUADRATHANE

Quadrathane™ ARC is a family of aromatic polycarbonate-based thermoplastic polyurethane. It offers superior biocompatibility, superior chemical resistance, and oxidative stability for use in long term body implantable applications. It is naturally clear, hemocompatible, and is USP Class VI and ISO-10993 compliant. Quadrathane™ ARC is used across a wide range of medical applications including chronic indwelling catheters, feeding catheters, pacemaker leads, coatings, orthopedics, and other applications where superior chemical resistance is required.

## CLEAR GRADES

Product & Properties	ASTM Test	ARC-75A	ARC-80A	ARC-85A	ARC-90A	ARC-93A	ARC-95A	ARC-55D	ARC-65D	ARC-72D
Durometer (Shore Hardness)	D2240	75A	80A	85A	90A	93A	95A	55D	65D	72D
Specific Gravity	D792	1.17	1.18	1.19	1.19	1.19	1.2	1.2	1.21	1.22
Flex Modulus (psi)	D790	1,200	1,500	3,500	6,000	7,500	10,500	28,000	40,000	60,000
Ultimate Tensile (psi)	D412	6,000	6,200	6,500	6,800	7,000	7,200	7,300	7,400	7,500
Ultimate Elongation (%)	D412	550	525	500	475	450	425	375	200	100
Tensile at 100% (psi)	D412	600	750	1,000	1,500	1,900	2,200	2,500	4,000	7,500
Tensile at 300% (psi)	D412	2,000	2,800	3,500	4,300	4,800	5,100	6,500	N/A	N/A
Mold Shrinkage (in/in)	D955	.008-.012	.008-.012	.008-.012	.008-.012	.008-.012	.008-.012	.008-.012	.008-.012	.008-.012

Biomerics Quadrathane can be compounded with radiopacifiers, colorants, or other additives. Customization of grades available.

## B20 GRADES

Product & Properties	ASTM Test	ARC 75A-B20	ARC 80A-B20	ARC 85A-B20	ARC 90A-B20	ARC 93A-B20	ARC 95A-B20	ARC 55D-B20	ARC 65D-B20	ARC 72D-B20
Durometer (Shore Hardness)	D2240	75A	80A	85A	90A	93A	95A	55D	65D	72D
Specific Gravity	D792	1.34	1.35	1.36	1.37	1.37	1.38	1.39	1.4	1.4
Flex Modulus (psi)	D790	1,300	1,800	3,800	6,100	8,000	12,000	30,000	45,000	75,000
Ultimate Tensile (psi)	D412	4,500	5,000	5,300	5,500	5,800	6,400	6,500	6,600	6,700
Ultimate Elongation (%)	D412	650	575	525	475	425	400	350	200	100
Tensile at 100% (psi)	D412	550	800	1,000	1,500	1,800	2,000	2,300	4,000	6,700
Tensile at 300% (psi)	D412	1,100	2,000	2,500	3,500	4,500	5,100	6,000	N/A	N/A
Mold Shrinkage (in/in)	D955	.008-.012	.008-.012	.008-.012	.008-.012	.008-.012	.008-.012	.008-.012	.008-.012	.008-.012

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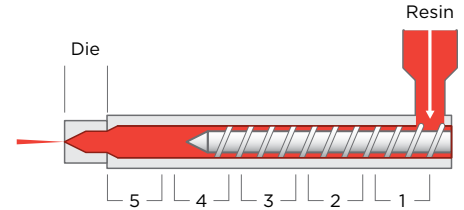
Extrusion, Injection Molding, Solution

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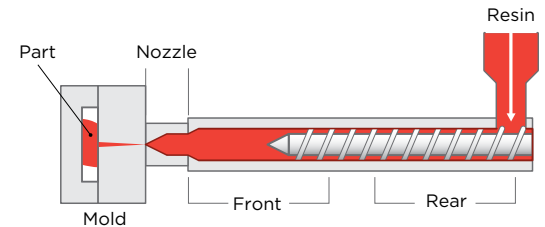


## EXTRUSION TEMPERATURE PROFILE CLEAR AND B20 GRADES



	ARC-75A	ARC-80A	ARC-85A	ARC-90A	ARC-93A	ARC-95A	ARC-55D	ARC-65D	ARC-72D
	°F/°C	°F/°C	°F/°C	°F/°C	°F/°C	°F/°C	°F/°C	°F/°C	°F/°C
Zone 1	310/154	310/154	340/171	340/171	340/171	340/171	350/177	350/177	350/177
Zone 2	330/166	330/166	360/182	360/182	360/182	360/182	370/188	370/188	370/188
Zone 3	350/177	350/177	370/188	370/188	370/188	370/188	380/193	380/193	380/193
Zone 4	360/182	360/182	380/193	380/193	380/193	380/193	390/199	390/199	390/199
Adapter 5	360/182	360/182	380/193	380/193	380/193	380/193	390/199	390/199	390/199
Die	360-380 / 182-193	380-420 / 182-193	380-420 / 193-216	380-420 / 193-216	380-420 / 193-216	380-420 / 193-216	390-420 / 199-216	390-420 / 199-216	390-420 / 199-216

## INJECTION MOLDING TEMPERATURE PROFILE CLEAR AND B20 GRADES



	ARC-75A	ARC-80A	ARC-85A	ARC-90A	ARC-93A	ARC-95A	ARC-55D	ARC-65D	ARC-72D
	°F/°C	°F/°C	°F/°C	°F/°C	°F/°C	°F/°C	°F/°C	°F/°C	°F/°C
Rear	350/177	350/177	360/182	370/188	370/188	370/188	390/199	400/204	400/204
Front	375/191	375/191	385/196	390/199	390/199	390/199	405/207	415/213	415/213
Nozzle	385/196	385/196	395/202	405/207	405/207	405/207	420/216	430/221	430/221
Melt	385/196	385/196	395/202	405/207	405/207	405/207	410/210	410/210	410/210
Mold	50-80/10-27	50-80/10-27	50-80/10-27	50-80/10-27	50-80/10-27	50-80/10-27	50-80/10-27	50-80/10-27	50-80/10-27

INJECTION SPEED: MEDIUM TO FAST



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## HANDLING & DRYING

Quadrathane ARC is hygroscopic, meaning the material will absorb and react with moisture in the atmosphere, and requires proper drying prior to processing. Moisture in the material will adversely affect the process parameters and end product physical properties. Materials should be properly dried in a desiccant dehumidifying hopper dryer prior to processing. Airflow to the hopper should be at least 1 cubic foot pound per minute for every pound of resin per hour at a dew point -40 F or less. It is also recommended that a machine mounted hopper drier be used. Material should be dried until the moisture content is less than 0.03% by weight. Recommended drying temperatures at times are listed in the table below by material grade.

### DRY FOR A MINIMUM OF 4 HOURS AT -40°F / -40°C DEW POINT

	ARC-75A	ARC-80A	ARC-85A	ARC-90A	ARC-93A	ARC-95A	ARC-55D	ARC-65D	ARC-72D
Recommended drying Temperature (°F)	135	140	140	150	150	160	160	180	180
Recommended drying Temperature (°C)	57	60	60	66	66	71	71	82	82

## BIOCOMPATIBILITY

Standard	ISO-10993		USP Class VI								
	4	5	Acute Systemic Toxicity Test				Intracutaneous Test				Implantation
Test	MEM Elution	Hemolysis, Extract	Normal Saline	Cottonseed Oil	5% EtOH in Saline	Polyethylene	Normal Saline	Cottonseed Oil	5% EtOH in Saline	Polyethylene	Intermuscular
Result	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass	Pass

## STERILIZATION

Sterilization Method	EtO	Peroxide	E-Beam	Gamma 25kGy	Gamma 50 kGy	Dry Heat	Autoclave
Guidance	Yes	Yes	Will Discolor	Will Discolor	Will Discolor	Will Discolor	Not Recommended

## NOTE

The information contained herein is believed to be accurate, but no representation or guarantees of any kind are made as to its accuracy. The information is based on lab results, are typical properties, and should not be construed as specifications. Fabrication conditions, part design, additives, process aids, finishing steps, and end use conditions all affect the performance and regulatory status of the end application. Due to variation in methods, conditions, and equipment, no warranties or guarantees are made as to the suitability or accuracy of this information for use in any end application. Users should confirm results via their own tests.

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