

Arothane™ ARP SERIES

► Description

Arothane™ ARP is medical grade aromatic polyether-based thermoplastic polyurethane (TPU). It exhibits excellent hydrolytic resistance, chemical resistance and good mechanical properties and biocompatibility, and can be color-matched. It can be processed by injection molding and extrusion.

► Biocompatibility

Arothane™ ARP pellets passed the Hemolysis test (ISO 10993-4), MEM Elution test (ISO 10993-5), Intracutaneous Irritation test (ISO 10993-10:2010 & 10993-23:2021), Dermal Sensitization test (ISO 10993-10:2010, 2021), Acute Systemic Toxicity test (ISO 10993-11) and *in vivo* Pyrogen test (ISO 10993-11, USP <151>.)

► Storage

Arothane™ ARP TPU pellets should be stored in a cool and dry environment in their original containers until used. Storage temperature should not exceed 85°F/30°C. If only a portion of TPU pellets was used, the container with remaining TPU pellets should be tightly closed. Since aromatic-type TPU is light-sensitive, it may turn yellowish after light exposure but will not necessarily have adverse impact on the mechanical properties when stored properly.

► Products and Properties

Arothane™ ARP Clear Grade	ASTM Test	ARP-75A	ARP-80A	ARP-85A	ARP-90A	ARP-93A	ARP-95A	ARP-60D	ARP-63D	ARP-68D	ARP-73D
Durometer (Shore hardness)	D2240	75A	82A	87A	92A	93A	95A	59D	64D	68D	74D
Specific Gravity	D792	1.08	1.09	1.11	1.14	1.15	1.15	1.16	1.17	1.18	1.18
Flexural Modulus (psi)	D790	3,000	3,300	4,750	8,800	9,000	11,000	17,000	24,000	30,000	67,000
Ultimate Tensile (psi)	D412	4,100	5,500	6,200	7,300	5,800	6,600	7,000	7,200	8,000	8,800
Tensile Modulus at 100% Elongation (psi)	D412	490	720	890	1,850	2,600	2,750	3,100	3,100	3,400	3,550
Tensile Modulus at 300% Elongation (psi)	D412	820	1,400	2,350	4,500	5,200	5,400	5,650	5,800	6,100	6,350
Ultimate Elongation (%)	D412	760	650	590	540	470	420	380	370	380	365
Mold Shrinkage (mm/mm)	D955	0.008-0.012	0.008-0.012	0.008-0.012	0.006-0.010	0.006-0.010	0.006-0.010	0.004-0.008	0.004-0.008	0.004-0.008	0.004-0.006

Note : These test results are based on small samples of Arothane™ ARP TPUs and do not represent the results from larger test samples. The manufacturing parameters should be adjusted according to users' actual conditions. The mold shrinkage test (D955) was performed on Type A bar specimen molded by injection process.

► Processing Information

Arothane™ ARP pellets are hygroscopic and **are necessarily dried before processing**. Depending on the climate, the pellets absorb moisture rapidly when exposed to the atmosphere. The moisture might cause severe polymer degradation during processing and form bubbles or streaks in the molded and extruded parts. To ensure the efficient and successful processing, the moisture content in TPU pellets is recommended to be **less than 0.05%**. A dehumidifying dryer is recommended for drying Arothane™ ARP TPU. For the best drying results, the dew point of the inlet air should not be higher than -40°F /-40°C. The recommended drying conditions are listed below **for a minimum of 5 hours**.



► **Processing Information :**

Arothane™ ARP	ARP-75A	ARP-80A	ARP-85A	ARP-90A	ARP-93A	ARP-95A	ARP-60D	ARP-63D	ARP-68D	ARP-73D
Recommended Drying Temperature (°F)	185-210	195-220	195-220	195-220	195-220	195-220	205-230	205-230	205-230	220-240
Recommended Drying Temperature (°C)	85-100	90-105	90-105	90-105	90-105	90-105	95-110	95-110	95-110	105-115

Note : Dry for a minimum of 5 hours at -40°F/ -40°C dew point

► **Recommended Extrusion Temperature Profile :**

Arothane™ ARP	ARP-75A (°F / °C)	ARP-80A (°F / °C)	ARP-85A (°F / °C)	ARP-90A (°F / °C)	ARP-93A (°F / °C)	ARP-95A (°F / °C)	ARP-60D (°F / °C)	ARP-63D (°F / °C)	ARP-68D (°F / °C)	ARP-73D (°F / °C)
Zone 1	375/190	385/195	390/200	390/200	400/205	400/205	400/205	410/210	410/210	410/210
Zone 2	385/195	390/200	400/205	400/205	410/210	410/210	410/210	420/215	420/215	420/215
Zone 3	385/195	390/200	400/205	400/205	410/210	410/210	410/210	420/215	420/215	420/215
Zone 4	390/200	400/205	410/210	410/210	420/215	420/215	420/215	430/220	430/220	430/220
Adapter 5	390/200	400/205	410/210	410/210	420/215	420/215	420/215	430/220	430/220	430/220
Die	385-400/ 195-205	390-410/ 200-210	400-420/ 205-215	400-420/ 205-215	410-430/ 210-220	410-430/ 210-220	410-430/ 210-220	420-435/ 215-225	420-435/ 215-225	420-435/ 215-225

Screen Pack Recommendation : 50/200/100

► **Recommended Injection Molding Temperature Profile :**

Arothane™ ARP	ARP-75A (°F / °C)	ARP-80A (°F / °C)	ARP-85A (°F / °C)	ARP-90A (°F / °C)	ARP-93A (°F / °C)	ARP-95A (°F / °C)	ARP-60D (°F / °C)	ARP-63D (°F / °C)	ARP-68D (°F / °C)	ARP-73D (°F / °C)
Rear	355/180	365/185	375/190	375/190	385/195	385/195	385/195	390/200	390/200	390/200
Front	365/185	375/190	385/195	385/195	390/200	390/200	390/200	400/205	400/205	400/205
Nozzle	375/190	385/195	390/200	390/200	400/205	400/205	400/205	410/210	410/210	410/210
Melt	410-430/ 210-220	420-435/ 215-225	430-445/ 220-230	430-445/ 220-230	435-455/ 225-235	435-455/ 225-235	435-455/ 225-235	445-465/ 230-240	445-465/ 230-240	445-465/ 230-240
Mold	60-85/ 15-30	60-85/ 15-30	60-85/ 15-30	70-105/ 20-40	70-105/ 20-40	70-105/ 20-40	70-105/ 20-40	75-120/ 25-50	75-120/ 25-50	75-120/ 25-50

