

# ALITHANE™ ALP-B40

## ► Description

Alithane™ ALP-B40 is medical grade aliphatic polyether-based thermoplastic polyurethanes (TPU) loaded with 40% Barium Sulfate as radiopacifier. Due to the chemical structure, aliphatic-type TPU is more light- stable and bio-stable than aromatic-type TPU. It exhibits excellent radiopacity and can be color-matched while retaining the biocompatibility, hydrolytic resistance, good mechanical properties and chemical resistance of clear grade ALP. It can be injection molded and extruded.

## ► Biocompatibility

Alithane™ ALP-B40 pellets passed the USP Class VI test, Hemolysis test (ISO 10993-4), MEM Elution (ISO 10993-5), Skin Irritation test (ISO 10993-10:2010 & 10993-23:2021), Dermal Sensitization test (ISO 10993-10:2010, 2021).

## ► Storage

Alithane™ ALP-B40 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.

## ► Products and Properties

Alithane™ ALP-B40	ASTM Test	ALP-80A-B40	ALP-85A-B40	ALP-90A-B40	ALP-95A-B40	ALP-65D-B40	ALP-70D-B40
Durometer (Shore hardness)	D2240	80A	83A	92A	97A	66D	70D
Specific Gravity	D792	1.49	1.50	1.52	1.54	1.54	1.54
Flexural Modulus (psi)	D790	3,300	4,000	4,600	6,400	19,000	30,000
Ultimate Tensile (psi)	D412	1,100	1,300	3,200	4,200	4,600	4,400
Tensile Modulus at 100% Elongation (psi)	D412	600	800	1,300	2,000	2,700	3,000
Tensile Modulus at 300% Elongation (psi)	D412	700	950	2,100	4,200	NA	NA
Ultimate Elongation (%)	D412	900	700	500	300	270	200
Mold Shrinkage (mm/mm)	D955	0.010-0.013	0.010-0.013	0.008-0.010	0.008-0.010	0.006-0.009	0.006-0.009

Note : These test results are based on small samples of Alithane™ ALP-B40 TPU 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

Alithane™ ALP-B40 TPU 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 Alithane™ ALP-B40 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 :**

Alithane™ ALP-B40	ALP-80A-B40	ALP-85A-B40	ALP-90A-B40	ALP-95A-B40	ALP-65D-B40	ALP-70D-B40
Recommended Drying Temperature (°F)	195-220	195-220	205-230	205-230	205-230	205-230
Recommended Drying Temperature (°C)	90-105	90-105	95-110	95-110	95-110	95-110

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

► **Recommended Extrusion Temperature Profile :**

Alithane™ ALP -B40	ALP-80A-B40 (°F / °C)	ALP-85A-B40 (°F / °C)	ALP-90A-B40 (°F / °C)	ALP-95A-B40 (°F / °C)	ALP-65D-B40 (°F / °C)	ALP-70D-B40 (°F / °C)
Zone 1	330/165	340/170	350/175	350/175	355/180	355/180
Zone 2	340/170	350/175	355/180	355/180	365/185	365/185
Zone 3	340/170	350/175	355/180	355/180	365/185	365/185
Zone 4	350/175	355/180	365/185	365/185	375/190	375/190
Adapter 5	350/175	355/180	365/185	365/185	375/190	375/190
Die	340-355/170-180	350-365/175-185	355-375/180-190	355-375/180-190	365-385/ 185-195	365-385/ 185-195

Screen Pack Recommendation : 50/200/100

► **Recommended Injection Molding Temperature Profile :**

Alithane™ ALP-B40	ALP-80A-B40 (°F / °C)	ALP-85A-B40 (°F / °C)	ALP-90A-B40 (°F / °C)	ALP-95A-B40 (°F / °C)	ALP-65D-B40 (°F / °C)	ALP-70D-B40 (°F / °C)
Rear	310/155	320/160	330/165	330/165	340/170	340/170
Front	320/160	330/165	340/170	340/170	350/175	350/175
Nozzle	330/165	340/170	350/175	350/175	355/180	355/180
Melt	365-385/ 185-195	375-390/ 190-200	385-400 /195-205	385-400 /195-205	390-410 /200-210	390-410 /200-210
Mold	50-75/10-25	50-75/10-25	60-85/15-30	60-85/15-30	70-105/20-40	70-105/20-40

