

## DURATHANE™ ALC-B40

### ► Description

Durathane™ ALC-B40 series products are medical grade aliphatic polycarbonate-based thermoplastic polyurethanes (TPU) loaded with 40% Barium Sulfate as radiopacifier. They exhibit better radiopacity than ALC-B20 and can be color-matched while retaining traits of clear grade ALC including the superior biocompatibility and mechanical properties as well as excellent resistance to oxidation, chemical, and hydrolysis. Due to the chemical structure, the aliphatic nature of ALC-B40 series products makes them more light-stable and bio-stable than the aromatic TPUs. These products can be injection molded and extruded.

### ► Biocompatibility

Durathane™ ALC-B40 pellets passed the Hemolysis test (ISO 10993-4), MEM Elution test (ISO 10993-5), 13-week implantation test (ISO10993-6), Skin Irritation test (ISO 10993-10:2010 & 10993-23:2021), Dermal Sensitization test (ISO 10993-10:2010, 2021).

### ► Storage

Durathane™ ALC-B40 TPU pellets should be stored in 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

Durathane™ ALC-B40	ASTM Test	ALC-80A-B40	ALC-85A-B40	ALC-90A-B40	ALC-95A-B40	ALC-65D-B40
Durometer (Shore hardness)	D2240	80A	85A	90A	95A	65D
Specific Gravity	D792	1.58	1.58	1.58	1.58	1.58
Flexural Modulus (psi)	D790	2,550	3,100	4,500	15,000	50,500
Ultimate Tensile (psi)	D412	2,000	2,700	3,300	3,400	3,700
Tensile Modulus at 100% Elongation (psi)	D412	460	750	1000	1700	2500
Tensile Modulus at 300% Elongation (psi)	D412	580	1,000	1,700	2,400	3,550
Ultimate Elongation (%)	D412	770	570	450	400	310
Mold Shrinkage (mm/mm)	D955	0.012-0.013	0.009-0.010	0.009-0.010	0.009-0.010	0.009-0.010

Note : These test results are based on small samples of Durathane™ ALC-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

Durathane™ ALC-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 Durathane™ ALC-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 :**

Durathane™ ALC-B40	ALC-80A-B40	ALC-85A-B40	ALC-90A-B40	ALC-95A-B40	ALC-65D-B40
Recommended Drying Temperature (°F)	165	165	175	175	195
Recommended Drying Temperature (°C)	75	75	80	80	90

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

► **Recommended Extrusion Temperature Profile :**

Durathane™ ALC-B40	ALC-80A-B40 (°F / °C)	ALC-85A-B40 (°F / °C)	ALC-90A-B40 (°F / °C)	ALC-95A-B40 (°F / °C)	ALC-65D-B40 (°F / °C)
Zone 1	355/180	355/180	365/185	365/185	375/190
Zone 2	365/185	365/185	375/190	375/190	385/195
Zone 3	365/185	365/185	375/190	375/190	385/195
Zone 4	375/190	375/190	385/195	385/195	390/200
Adapter 5	375/190	375/190	385/195	385/195	390/200
Die	365-385/185-195	365-385/185-195	375-390/190-200	375-390/190-200	385-400/195-205

Screen Pack Recommendation : 50/200/100

► **Recommended Injection Molding Temperature Profile :**

Durathane™ ALC-B40	ALC-80A-B40 (°F / °C)	ALC-85A-B40 (°F / °C)	ALC-90A-B40 (°F / °C)	ALC-95A-B40 (°F / °C)	ALC-65D-B40 (°F / °C)
Rear	340/170	340/170	350/175	350/175	355/180
Front	350/175	350/175	355/180	355/180	365/185
Nozzle	355/180	355/180	365/185	365/185	375/190
Melt	390-410/200-210	390-410/200-210	400-420/205-215	400-420/205-215	410-430/210-220
Mold	60-85/15-30	60-85/15-30	70-95/20-35	70-95/20-35	70-95/20-35

