

DURATHANE™ ALC-B20

► Description

Durathane™ ALC-B20 series products are medical grade aliphatic polycarbonate-based thermoplastic polyurethanes (TPU) loaded with 20% Barium Sulfate as radiopacifier. They exhibit excellent radiopacity 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-B20 series products makes them more lightstable and bio-stable than the aromatic TPUs. These products can be injection molded and extruded.

► Biocompatibility

Durathane™ ALC-B20 pellets **passed the USP Class VI test** 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).

► Storage

Durathane™ ALC-B20 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-B20	ASTM Test	ALC-75A-B20	ALC-80A-B20	ALC-85A-B20	ALC-90A-B20	ALC-95A-B20	ALC-60D-B20	ALC-65D-B20
Durometer (Shore hardness)	D2240	75A	80A	85A	90A	95A	60D	65D
Specific Gravity	D792	1.33	1.33	1.33	1.33	1.33	1.33	1.33
Flexural Modulus (psi)	D790	2,150	2,700	2,700	4,100	10,600	20,500	41,500
Ultimate Tensile (psi)	D412	2,700	3,200	4,200	4,000	4,000	4,350	4,600
Tensile Modulus at 100% Elongation (psi)	D412	350	500	700	910	1,600	2,000	2,500
Tensile Modulus at 300% Elongation (psi)	D412	500	750	1,500	1,800	3,400	3,600	4,000
Ultimate Elongation (%)	D412	800	650	500	450	360	350	320
Mold Shrinkage (mm/mm)	D955	0.020-0.025	0.013-0.014	0.013-0.014	0.011-0.014	0.009-0.010	0.007-0.009	0.006-0.008

Note : These test results are based on small samples of Durathane™ ALC-B20 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-B20 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-B20 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-B20	ALC-75A-B20	ALC-80A-B20	ALC-85A-B20	ALC-90A-B20	ALC-95A-B20	ALC-60D-B20	ALC-65D-B20
Recommended Drying Temperature (°F)	160	165	165	175	175	175	195
Recommended Drying Temperature (°C)	70	75	75	80	80	80	90

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

► **Recommended Extrusion Temperature Profile :**

Durathane™ ALC-B20	ALC-75A-B20 (°F / °C)	ALC-80A-B20 (°F / °C)	ALC-85A-B20 (°F / °C)	ALC-90A-B20 (°F / °C)	ALC-95A-B20 (°F / °C)	ALC-60D-B20 (°F / °C)	ALC-65D-B20 (°F / °C)
Zone 1	350/175	355/180	355/180	355/180	365/185	365/185	375/190
Zone 2	355/180	365/185	365/185	365/185	375/190	375/190	385/195
Zone 3	355/180	365/185	365/185	365/185	375/190	375/190	385/195
Zone 4	365/185	375/190	375/190	375/190	385/195	385/195	390/200
Adapter 5	365/185	375/190	375/190	375/190	385/195	385/195	390/200
Die	355-375/ 180-190	365-385/ 185-195	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-B20	ALC-75A (°F / °C)	ALC-80A (°F / °C)	ALC-85A (°F / °C)	ALC-90A (°F / °C)	ALC-95A (°F / °C)	ALC-60D (°F / °C)	ALC-65D (°F / °C)
Rear	330/165	340/170	340/170	340/170	350/175	350/175	355/180
Front	340/170	350/175	350/175	350/175	355/180	355/180	365/185
Nozzle	350/175	355/180	355/180	355/180	365/185	365/185	375/190
Melt	385-400/ 195-205	390-410/ 200-210	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	60-85/15-30	60-85/15-30	70-95/20-35	70-95/20-35	70-95/20-35

