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Recommendations for Machining Various Compounds of ADIPRENE®

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Urethane Prepolymers

Crompton
Uniroyal Chemical

RECOMMENDATIONS FOR MACHINING VARIOUS COMPOUNDS OF ADIPRENE

Application	Recommended Tools	Size Limitations	ADIPRENE Grades	Max Operating Speeds	Work-Holding Methods	Suggestions
Band sawing	Sharp 2-4 hook carbon blade with raker set	Max. of 8 inch diameter; Min. of ⅛ inch thick sheets	All grades	1800 sfpm (Reduce sawing speeds with L-42 and L-100 grades to about 1200 sfpm)	Vises or clamps (not required with flats and sheets)	Rotate rounds when sawing. Maintain high blade tension to minimize friction.
Cutting, Shearing, and Slitting	Abrasive cutting machines, or shears, with up to ⅛ inch knife blade	Thin sheets only (up to ½ inch thick)	All grades	—	Friction clamps	Use bevel edge knives to prevent compressing urethane resulting in uneven cuts
Drilling	High-speed twist drills preferred, with 90° or more blunt point	Min. of ⅜ inch diameter, under ⅜ inch must be clamped between steel plates	All grades	600-800 rpm	Clamp or vise	Precise tolerances are difficult to hold except with Grade L-315; use over-size drills and taps for other grades
Tapping	Regular high-speed taps	None	All grades	—	Clamp or vise	

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Turning and Boring	High-speed steel tool bits with positive rake of 5 to 10 degrees	No limit on diameter, but depends upon length (long, softer grades will flex)	For softer grades, rake is required	Min. of 800 sfpm	Angle of cut to work: 90 to 120 degrees	Form tools can be used when L-315 grade
Milling	Sharp, single-blade flycutters with 10-degree back rake and good clearance	Min. of ⅜ inch thick	All grades, but grade L-315 is best for end milling. With L-167 and L-100 grades, cutters must be ground with extreme back clearance	Approx. 2000 sfpm (with 3 inch diameter cutter)	Vise or double-face clamping tape	Flycutting at approx. 3 inch diameter desirable

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PROCEDURE FOR GRINDING ADIPRENE L 100

Product Machined:	A roll prepared from a conventional MBCA cure of ADIPRENE L 100, 90 Shore A Hardness
Grinding Wheel:	30” diameter wheel, with a 3” wide face. Wheel No. 38A46K5 VBE
Configuration:	Grinding wheel stationary; the roll was fed to the grinding wheel at a rate of 7”/min.
Grinding Speed:	The roll was rotated at 25 rpm, a surface speed of 450 ft./min. The grinding wheel was rotated at 800 rpm, with a surface speed of 6500 ft./min.
Grinding Wheel Treatment:	The grinding wheel was dressed to a coarse finish for initial work and to a finer finish later to provide smooth roll surface finish.
Lubrication:	“Silver Chip” cutting lubricant was used. Water alone would be satisfactory. The lubricant was used in copious quantities.
Results:	The surface finish was excellent. Runout over the length was held to less than 0.0001” per foot of length. Diameter dimensions were held to less than 0.0001” on the diameter per foot of length.
Comments:	It was reported that the roll could be ground as easily as any 50 Durometer Neoprene roll. The grinding operator compared the machinability of ADIPRENE L to that of chromium steel.