



Tolerances for Molded Elastomeric Compounds

Due to their chemical and physical makeup molded elastomers cannot be held to the same type of tolerance control as a machined material. During the manufacturing process there are numerous factors that affect the final dimension of a molded item including mold temperature, mold time, variations in raw material, post cure time and the shrinkage percentage of the material being used. In addition, any mold designed for the specific shrink rate of a particular will have different tolerances than that designed for a different elastomer.

All elastomeric components experience some level of volumetric reduction (shrinkage) during the production process. Shrinkage is related to the elastomeric compound and also the general hardness (Shore) of the material. In general a harder material (70 to 90 durometer) will experience a smaller volumetric loss than a soft compound.

The expertise in tool manufacturing involves understanding how each compound reacts during production and being able to accurately engineer a tool to produce parts within specified tolerances. Obviously the time, effort and cost required to develop a tool for an A2 level part is higher than an equivalent A3 level tool.

Tolerance Tables for Molded Elastomers

"A2" Level Drawings - Precision Designation

Size (Millimeters)			Size (Inches)		
Above - Included	Fixed	Closure	Above - Included	Fixed	Closure
0 - 10	±.16	±.20	0 - .40	±.006	±.008
10 - 16	.20	.25	.40 - .63	.008	.010
16 - 25	.25	.32	.63 - 1.00	.010	.013
25 - 40	.32	.40	1.00 - 1.60	.013	.016
40 - 63	.40	.50	1.60 - 2.50	.016	.020
63 - 100	.50	.63	2.50 - 4.00	.020	.025
100 - 160	.63	.80	4.00 - 6.30	.025	.032
160 & over	X .004	x .005	6.30 & over	X .004	X .005

"A3" Level Drawings - Commercial Designation

Size (Millimeters)			Size (Inches)		
Above - Included	Fixed	Closure	Above - Included	Fixed	Closure
0 - 10	±.20	±.32	0 - .40	±.008	±.013
10 - 16	.25	.40	.40 - .63	.010	.016
16 - 25	.32	.50	.63 - 1.00	.013	.020
25 - 40	.40	.63	1.00 - 1.60	.016	.025
40 - 63	.50	.80	1.60 - 2.50	.020	.032
63 - 100	.63	1.00	2.50 - 4.00	.025	.040
100 - 160	.80	1.25	4.00 - 6.30	.032	.050
160 & over	X .005	x .008	6.30 & over	X .005	X .008