



A closer look... at RMA tolerances

Many variables affect tolerances of thermoset elastomers including temperature, cure time, mold textures, batch and compound variation, mold inserts, distortion, trim, and shrinkage. Shrinkage occurs on all rubber when removed from heat and allowed to cool. Although built into the mold, shrinkage will vary depending on the part complexity (even within the same cavity). Critical dimensions relative to function, fit or safety may override general RMA tolerances.

A1 High Precision

This is the tightest tolerance classification and indicates a high precision rubber product. Parts require expensive molds, fewer cavities per mold, in-process controls and production inspections which result in higher costs. Optical comparators or other measuring devices are typically required for precise measurements. The exact method of measurement should be agreed upon between rubber manufacturer and customer, as errors in measurement may be large in relation to the tolerance.

A2 Precision

These moldings involve much of the close controls required for the above class. Molds must be precision machined and kept in good repair. While measurement methods may be simpler than the above class, careful inspection will usually be required.

A3 Commercial

This class indicates a general grade or commercial product. This is the most commonly used class.

A4 Non-critical

Molds by this class apply to products where control is non-critical and secondary to cost.

Metric Tolerances (mm)									
NOMINAL DIMENSION		A1		A2		A3		A4	
ABOVE	UP TO AND INCLUDING	FIXED	CLOSURE	FIXED	CLOSURE	FIXED	CLOSURE	FIXED	CLOSURE
0	10	0.10	0.13	0.16	0.20	0.20	0.32	0.32	0.80
10	16	0.13	0.16	0.20	0.25	0.25	0.40	0.40	0.90
16	25	0.16	0.20	0.20	0.32	0.32	0.50	0.50	1.00
25	40	0.20	0.25	0.32	0.40	0.40	0.63	0.63	1.12
40	63	0.25	0.32	0.40	0.50	0.50	0.80	0.80	1.25
63	100	0.32	0.40	0.50	0.63	0.63	1.00	1.10	1.40
100	160	0.40	0.50	0.63	0.80	0.80	1.25	1.25	1.60
160 & over (Multiply by)					x .004	x .005	x .005	x .008	x .010

Inch Tolerances (in)									
NOMINAL DIMENSION		A1		A2		A3		A4	
ABOVE	UP TO AND INCLUDING	FIXED	CLOSURE	FIXED	CLOSURE	FIXED	CLOSURE	FIXED	CLOSURE
0	0.4	0.004	0.005	0.006	0.008	0.008	0.013	0.013	0.032
0.4	0.63	0.005	0.006	0.008	0.01	0.01	0.016	0.016	0.036
0.63	1	0.006	0.006	0.01	0.013	0.013	0.02	0.02	0.04
1	1.6	0.008	0.01	0.013	0.016	0.016	0.025	0.025	0.045
1.6	2.5	0.01	0.013	0.016	0.02	0.02	0.032	0.032	0.05
2.5	4	0.013	0.016	0.02	0.025	0.025	0.04	0.04	0.056
4	6.3	0.016	0.02	0.025	0.032	0.032	0.05	0.05	0.063
6.30 & over (Multiply by)					x .004	x .005	x .005	x .008	x .010

Note: "FIXED" dimensions are those not affected by flash. "CLOSURE" dimensions are those affected by flash.