

# ISO Tolerance Standards for Rubber

ISO 3302-1 & ISO 3601 Reference Charts

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## 1. ISO 3302-1 Molded Rubber Tolerances

ISO 3302-1 defines four tolerance classes (M1-M4) for molded solid rubber products. M1 is highest precision, M4 is basic tolerance.

Dimension (mm)	M1 Fixed $\pm$	M2 Fixed $\pm$	M3 Fixed $\pm$	M4 Fixed $\pm$
0 - 4	0.08	0.10	0.25	0.50
4 - 6.3	0.10	0.15	0.25	0.50
6.3 - 10	0.10	0.20	0.30	0.70
10 - 16	0.15	0.20	0.40	0.80
16 - 25	0.20	0.25	0.50	1.00
25 - 40	0.20	0.35	0.60	1.30
40 - 63	0.25	0.40	0.80	1.60
63 - 100	0.35	0.50	1.00	2.00
100 - 160	0.40	0.70	1.30	2.50

## 2. ISO 3601-1 O-Ring Tolerances

ISO 3601-1 specifies dimensions and tolerances for metric O-rings. Class A = AS568 equivalent, Class B = metric standard.

ID Range (mm)	ID Tolerance $\pm$	CS Range (mm)	CS Tolerance $\pm$
1.0 - 5.0	0.13 - 0.15	"d 2.62	0.08
5.0 - 10.0	0.15 - 0.17	2.63 - 3.00	0.09
10.0 - 20.0	0.17 - 0.22	3.01 - 4.50	0.10
20.0 - 40.0	0.22 - 0.33	4.51 - 5.50	0.13
40.0 - 100.0	0.33 - 0.82	5.51 - 7.50	0.15
100.0 - 180.0	0.82 - 1.20	7.51 - 10.0	0.18 - 0.20

## 3. Surface Finish Requirements

Application	Ra ( $\mu\text{m}$ )	Ra ( $\mu\text{in}$ )	Notes
Dynamic Seal (Rod)	0.1 - 0.3	4 - 12	Hard chrome plated
Dynamic Seal (Bore)	0.2 - 0.4	8 - 16	Ground or honed
Static O-Ring Groove	0.8 - 3.2	32 - 125	Machined finish
Gasket Surface	3.2 - 12.5	125 - 500	Milled or turned

## 4. Measurement Standards



ASTM D3767: Standard procedures for rubber dimensional measurement



Contact Pressure: 22-26 kPa for standard rubber, 2.5 kPa for soft (<35 Shore A)



Minimum 3 measurements per specimen, report average