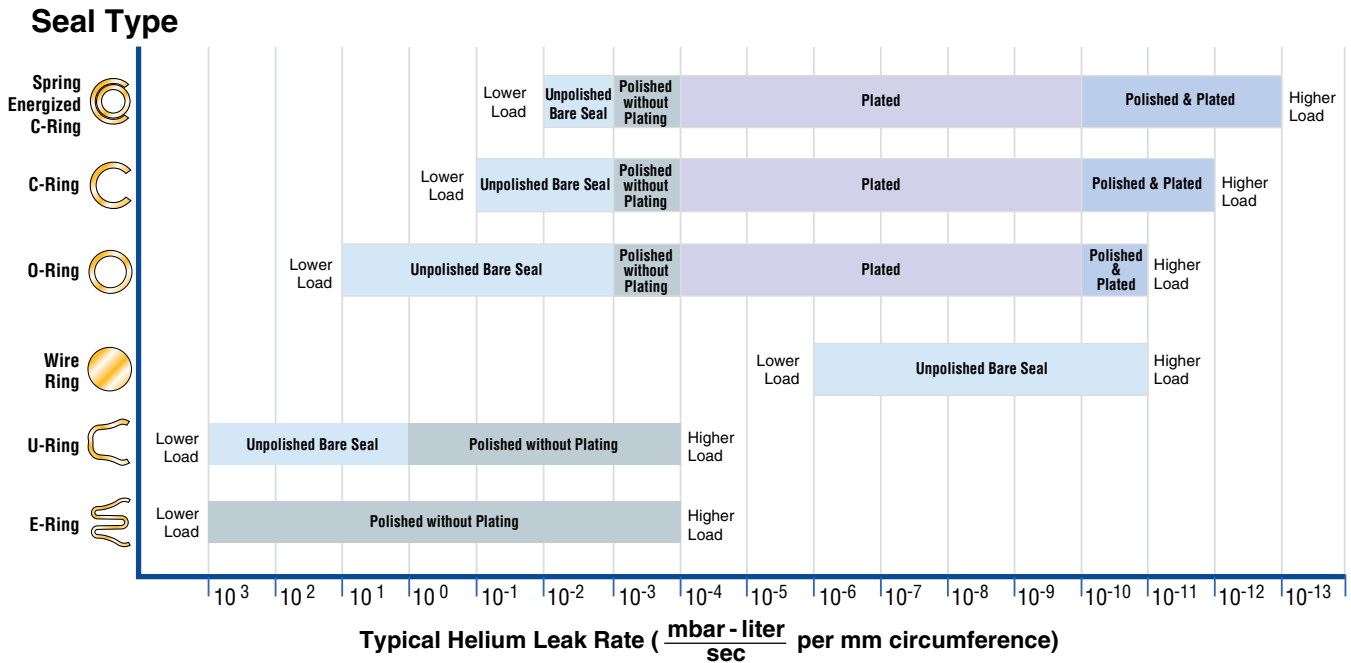


Leak Rate Information



Equivalent leak rates for other gases: Multiply the helium leakage rate by the following factors to obtain the leakage rate of the following gases.

Oxygen: 0.35

Nitrogen: 0.37

Hydrogen: 1.42

Air: 0.37

The graph above shows typical ranges of leakage rates that may be expected with various types of seals. Testing was performed using helium mass-spectroscopy leakage detection. A standardized condition of 1 atmosphere differential pressure at 70°F was used in all cases. Test procedures and installation parameters were in accordance with the recommendations given in this design guide including a surface roughness of 16-32 μ inch R_a .

The widths of the horizontal bars indicate the spread of leakage values that may be expected depending on the specific plating selection and surface condition. (It should be noted that these results are not directly applicable to liquids, since the much higher viscosities and surface tension will generally prevent leakage entirely).

As a service to our customers, we are pleased to offer specific seal performance testing and analysis for unusually challenging and “mission critical” applications. Testing can be set up to reproduce the actual conditions expected in service. Please contact your local Parker representative.

Leak Rate Equivalents					
$\frac{\text{cc}}{\text{sec}}$	$\frac{\text{mbar} \cdot \text{liter}}{\text{sec}}$	$\frac{\text{Torr} \cdot \text{liter}}{\text{sec}}$	$\frac{\text{Pa} \cdot \text{m}^3}{\text{sec}}$	Approximate Equivalent	Approximate 1mm ³ Bubble Equivalent
1	1.01	7.6x10 ⁻¹	1.01x10 ⁻¹	2x10 ⁻³ SCFM	Steady Stream
1x10 ⁻¹	1.01x10 ⁻¹	7.6x10 ⁻²	1.01x10 ⁻²	1 cc every 10 seconds	Steady Stream
1x10 ⁻²	1.01x10 ⁻²	7.6x10 ⁻³	1.01x10 ⁻³	1 cc every 100 seconds	10 per second
1x10 ⁻³	1.01x10 ⁻³	7.6x10 ⁻⁴	1.01x10 ⁻⁴	3 cc per hour	1 per second
1x10 ⁻⁴	1.01x10 ⁻⁴	7.6x10 ⁻⁵	1.01x10 ⁻⁵	1 cc every 3 hours	1 every 10 seconds
1x10 ⁻⁵	1.01x10 ⁻⁵	7.6x10 ⁻⁶	1.01x10 ⁻⁶	1 cc every 24 hours	1 every 100 seconds
1x10 ⁻⁶	1.01x10 ⁻⁶	7.6x10 ⁻⁷	1.01x10 ⁻⁷	1 cc every 2 weeks	3 per hour
1x10 ⁻⁷	1.01x10 ⁻⁷	7.6x10 ⁻⁸	1.01x10 ⁻⁸	3 cc per year	Bubbles too infrequent to observe
1x10 ⁻⁸	1.01x10 ⁻⁸	7.6x10 ⁻⁹	1.01x10 ⁻⁹	1 cc every 3 years	
1x10 ⁻⁹	1.01x10 ⁻⁹	7.6x10 ⁻¹⁰	1.01x10 ⁻¹⁰	1 cc every 30 years	
1x10 ⁻¹⁰	1.01x10 ⁻¹⁰	7.6x10 ⁻¹¹	1.01x10 ⁻¹¹	1 cc every 300 years	
1x10 ⁻¹¹	1.01x10 ⁻¹¹	7.6x10 ⁻¹²	1.01x10 ⁻¹²	1 cc every 3000 years	