

Metal Seal Selection at a Glance

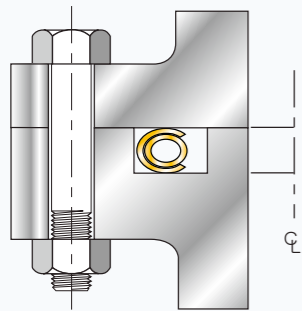
메탈씰 선정시, 아래의 특성비교표와 별도페이지의 타입별 Leak Rate 비교자료를 참고하시기 바랍니다.

Ratings : ● Excellent ● Very Good ○ Good ○ Fair ⊘ Not Recommended

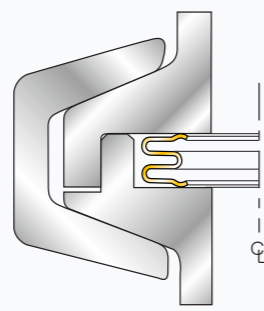
Seal Type	Sealing Requirements					
	High Springback	Low Load	High Load	Low Leak Rate	Pressure Capability	Low Cost
	○	○	○	●	●	●
	●	●	⊘	○	○	○
	○	⊘	●	●	●	●
	⊘	⊘	●	○	●	●
	○	⊘	●	●	●	○

⚠ 헬리코플렉스씰 (Technetics Group)과 관련해서는 별도의 자료 참고하시기 바랍니다.

Axial Face Sealing Applications :

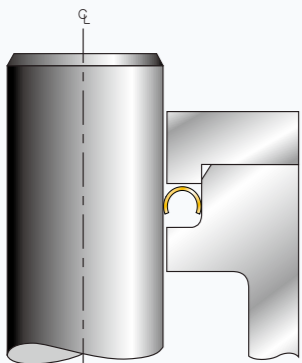


High Load
Generally, the high load seals provide greater leak tightness and are preferred when there is sufficient seating load (the load required to compress the seal) and little flange movement due to thermal excursions, vibrations, etc.



High Elasticity
Lower load seals are frequently used when resiliency or springback is needed to maintain effective sealing during flange separation or rotation. Additionally, low load seals are suitable for applications where seating load is limited or there is concern about yielding or damaging the mating hardware surfaces.

Radial Sealing (Axial Pressure) Application :



MCA C-Ring
can be used as either a static seal or in semi-dynamic applications such as a quarter-turn valve stem seal.

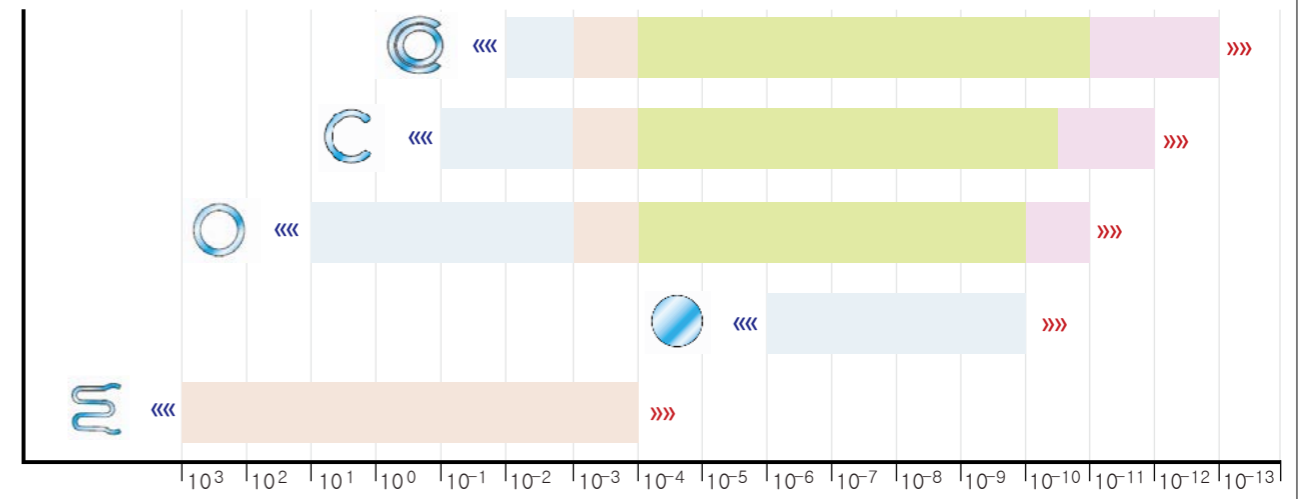


메탈씰 타입별 Leak Rate 비교 Leak Rate Information

Unpolished Base Seal	Polished without Plating	Plated	Polished & Plated
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« : Lower Seating Load, » : Higher Seating Load Seating Load (Y₂)가 클수록 Leak Rate는 낮아집니다.

Seal Type



TYPICAL HELIUM LEAK RATE (mbar-l/sec-mm circumference)

● 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

- Test Condition : 1 atm differential pressure at 21°C, Surface roughness 0.4 ~ 0.8 μm Ra
- 동일Type의 메탈씰에서도 재질두께 (Wall thickness), Plating의 종류, Surface Finish에 따라 Sealing Level (Leak rate)이 달라짐
- 가령, 메탈오링의 재질두께(Wall thickness)가 두꺼울수록 Required Seating load(Y₂)가 커지기 때문에 leak rate는 낮아집니다. (작용과 반작용)
- 상기의 Leak rate는 Helium gas의 경우이며, Gas의 종류에 따라 Leak rate가 다를 뿐 아니라, 가령 액체와 같이 점도가 높고 표면장력이 큰 유체일수록 Leak Rate가 낮아진다.

✓ 헬리코플렉스씰 (Technetics Group)과 관련해서는 별도의 자료 참고하시기 바랍니다.

Leak Rate Equivalents :

cc/sec	mbar - l/sec	Torr - l/sec	Pa - m ³ /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	