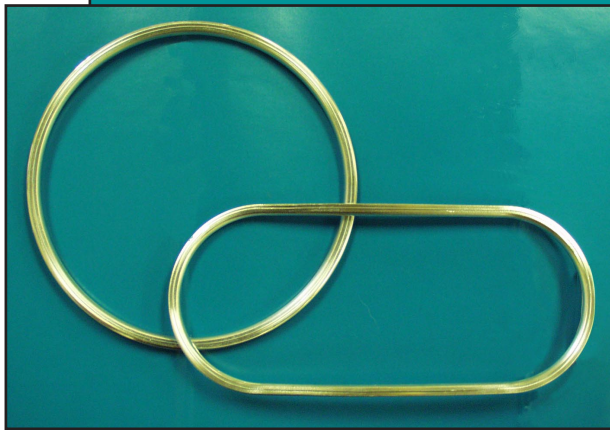
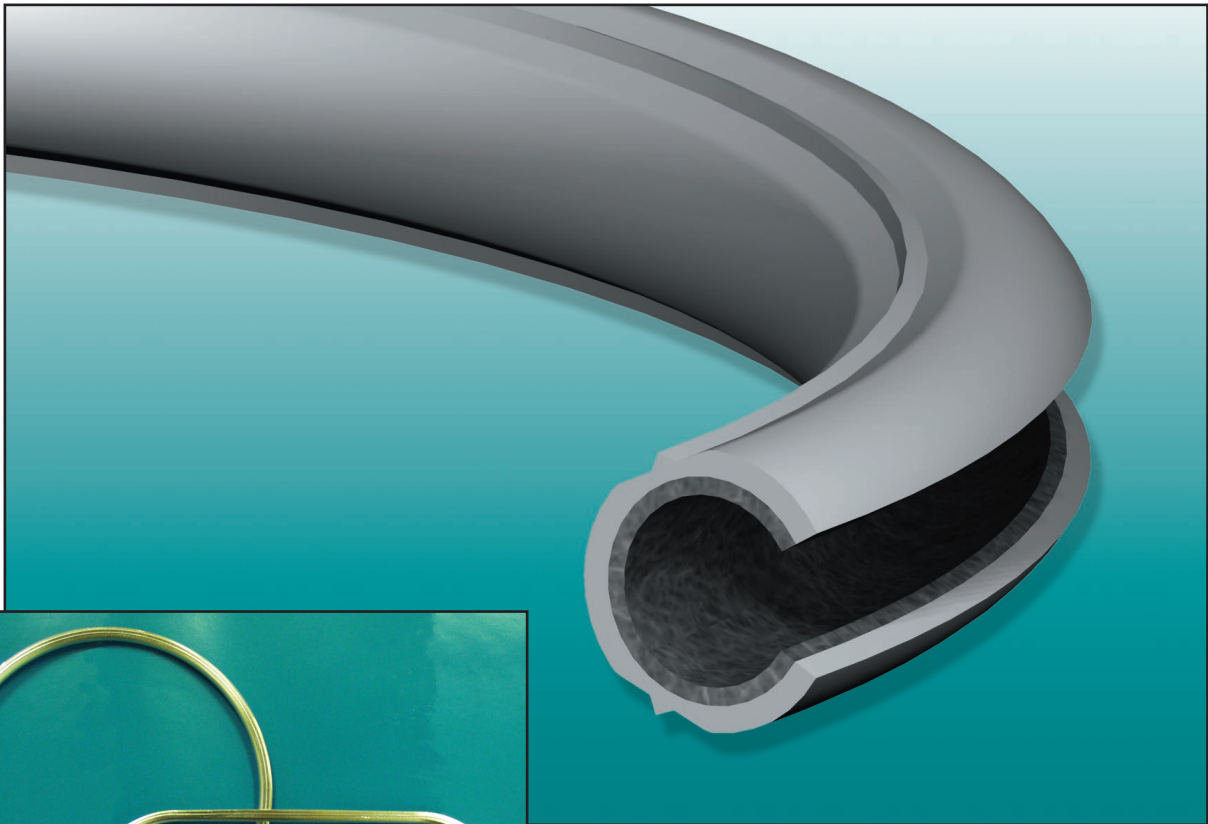


ULTRA-FLEX[®]

Low Load Metal Seal

For Semiconductor, High Purity,
Tight Sealing Applications



International Patents Pending

Garlock

SEALING TECHNOLOGIES[®]

Replacement For Perfluoroelastomer O-Rings

- Designed for semiconductor, high purity, tight sealing applications
- Tighter seal: $< 1 \times 10^{-9}$ cc/sec He
- Reduced contamination
- 90% lower load than standard metal seals
- Compatible with aggressive semiconductor media including plasmas
- Good for applications up to 300°C
- No out-gassing
- Equipment sealing surfaces stay clean
- Near universal coverage with *ONE* style

Operating Principle

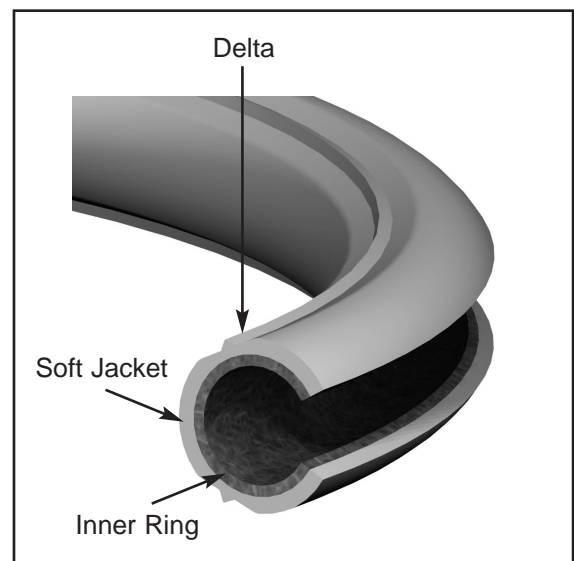
The ULTRA-FLEX® seal relies on the deformation of the material at the Delta under compression to fill in micro-surface irregularities. The deformation of the soft material layer is plastic (permanent).

Load of the aluminum jacketed seals are 100 - 200 lbs/circumferential inch.

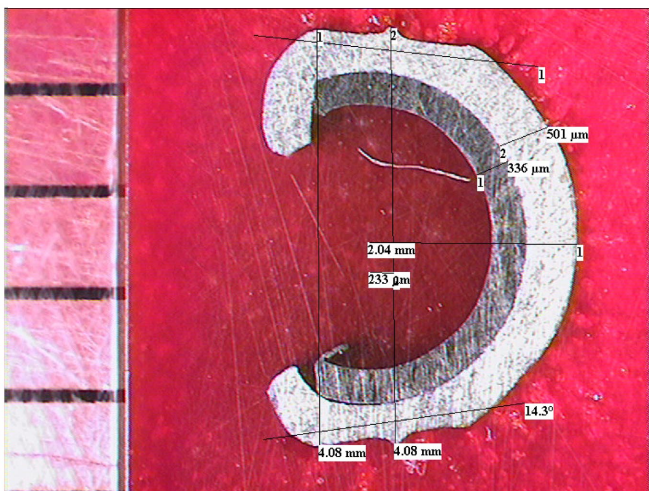
The seal rebounds 10%-15% even after high temperature exposure.

Status:

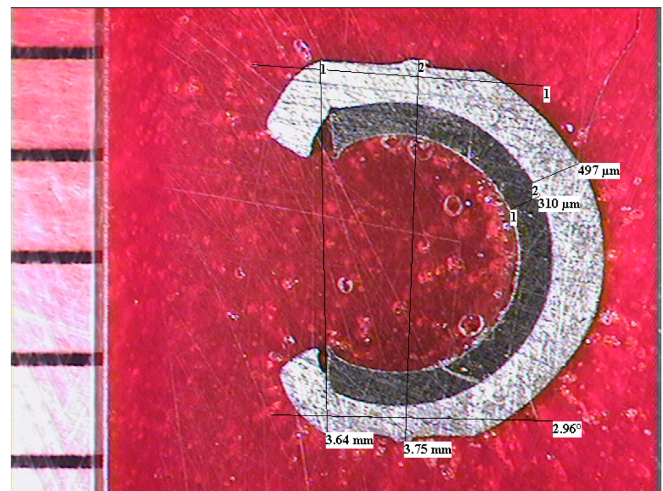
- International patents pending
- Aluminum design complete
- Beta testing
- Prototyping non-round seals



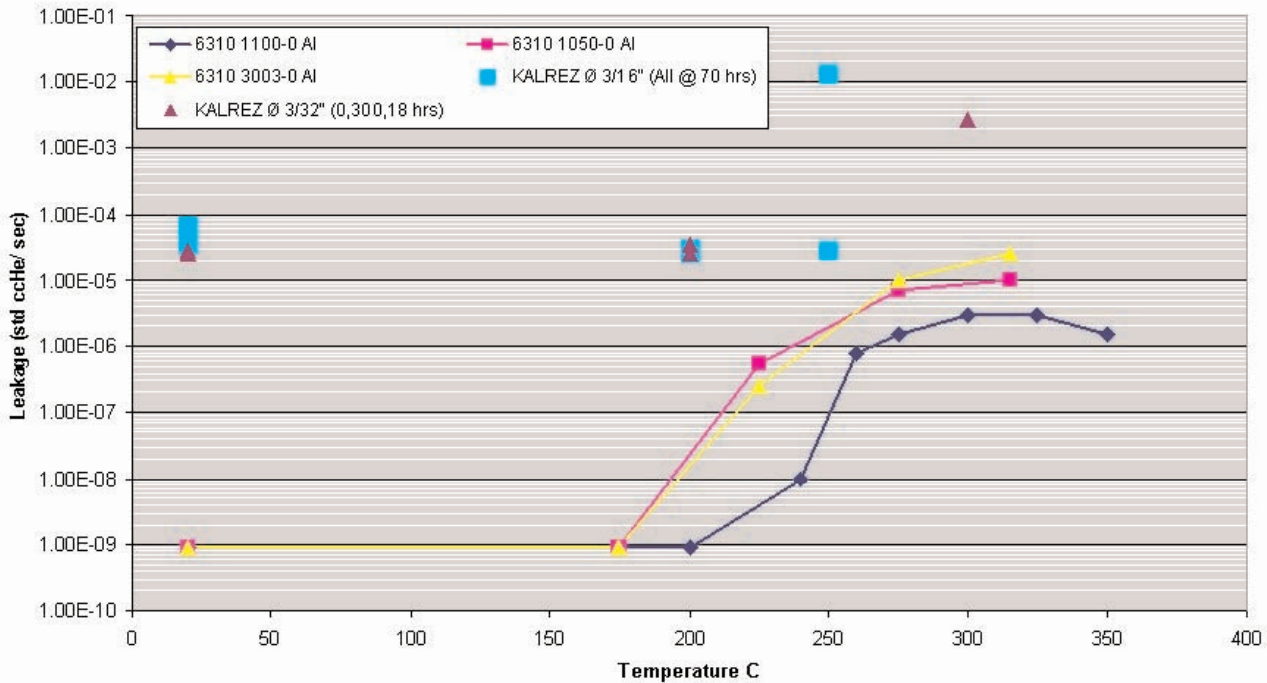
Seal Prior to Compression



Seal After Usage

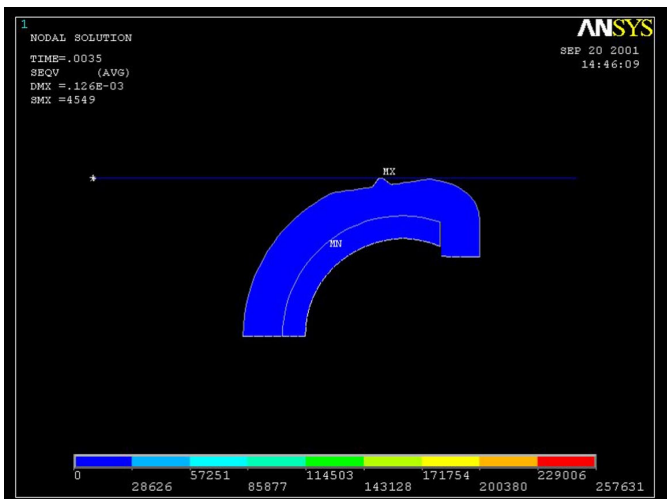


Comparison of Leakage Rates Perfluoroelastomer vs ULTRA-FLEX®

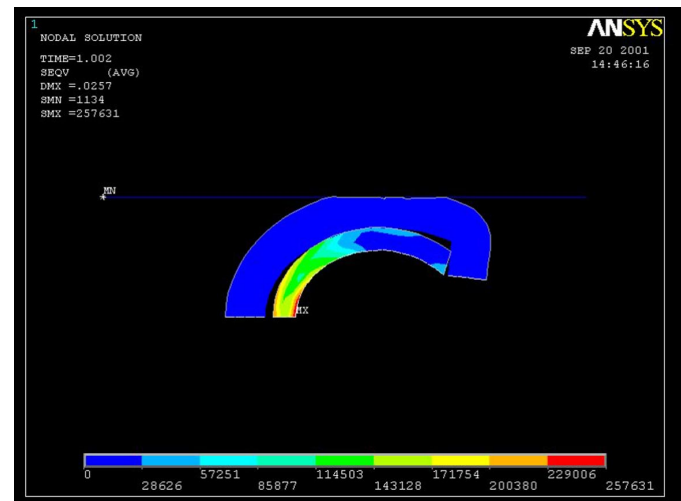


- Tighter seal over broader range of temperature
- 100 to 10,000 times tighter than perfluoroelastomer seals

Unloaded Seal



Loaded Seal



Advanced, non-linear FEA software shows the operating principle of the ULTRA-FLEX® seal.

Key Attributes:

- Deformation of the delta sealing region
- Decoupling of the inner spring layer and the soft outer jacket

Applications

Wet Applications (Lithography, Etch Stripping, Cleaning)

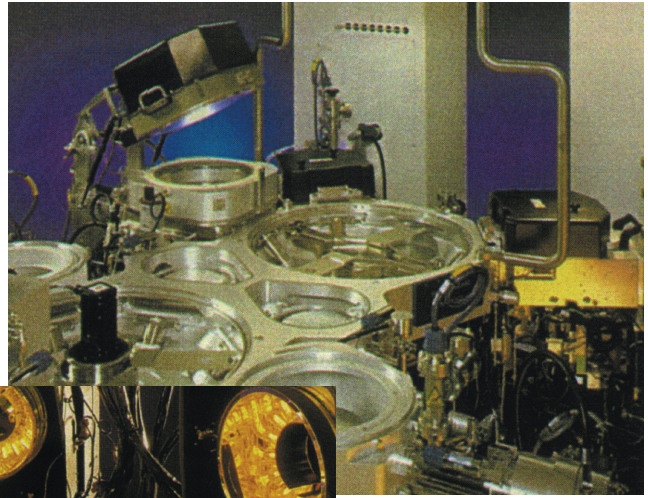
- Drain seals
- Seals for chemical containers
- Seals for filters/connectors

Dry Plasma (Etching, Ashing, PECVD/APCVD), Dry Gas (PVD, Metal CVD)

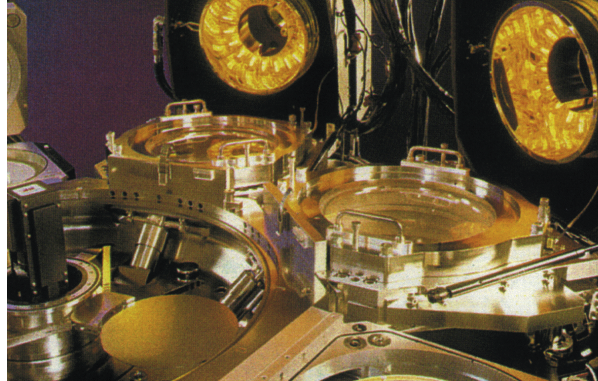
- Chamber lid
- Lamp seal
- Exhaust valve
- Gas inlet/outlet
- Window seal
- Centering ring
- Fittings/connectors

Dry Thermal (LPCVD, Lamp Anneal, Oxidization Diffusion)

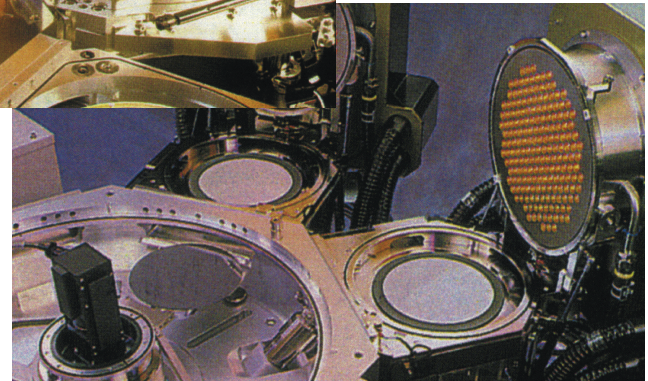
- Quartz chamber seal
- Fittings
- Centering ring



CVD and PVD Technologies



RTP System



Deposition Technologies

AUTHORIZED DISTRIBUTOR



ISO 9002-94
Cert. #001762

WARNING:

Properties/applications shown throughout this brochure are typical. Your specific application should not be under taken without independent study and evaluation for suitability. For specific application recommendations consult Garlock. Failure to select the proper sealing products could result in property damage and/or serious personal injury.

Performance data published in this brochure has been developed from field testing, customer field reports and/or in-house testing.

While the utmost care has been used in compiling this brochure, we assume no responsibility for errors. Specifications subject to change without notice. This edition cancels all previous issues. Subject to change without notice.

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