

ASNA PERFREZ® 5002

Special hybrid with both excellent mechanical and chemical compatibilities

Technical Data Sheet (Mar 2019)

Enhance plasma resistance while maintain great resilience

PERFREZ® 5002, a PTFE filled material, is capable of handling harsh cleaning gases such as NF3 in applications where killer defect sizes are not as challenging. The PTFE improves the resistance to plasma yet maintains good physical properties. It is a good alternative for present and past chip designs.



Features and Benefits

- Excellent oxygen and fluorine compatibilities
- Good plasma resistance
- Superior physical properties and low CTE
- Low out-gassing
- Excellent abrasion resistance

Compatible Semiconductor Process

- ✓ Deposition: CVD, APCVD, HDPCVD, RPCVD, SACVD
- ✓ Plasma Etch: oxide and metal
- ✓ Ashing
- ✓ Ion Implant
- ✓ Etch

Applications:

- ✓ Chamber Lid Seals
- ✓ Door Seals
- ✓ End Point Windows
- ✓ Gas Inlet Seals
- ✓ Isolator Valve Seals
- ✓ KF-Fittings
- ✓ Slit Valves
- ✓ Window Seals
- ✓ Gate Valve Seals

Typical Physical Properties¹

Color ²	White
Hardness, (Shore A)	80 (+/-5)
Elongation at break ³ , %	198
Tensile Strength, psi(MPa)	1267(8.74)
Modulus @100%, psi(MPa)	734(5.06)
Specific Gravity (g/cm ³)	1.97
Min. Operating Temperature, °C(°F)	-20(-4)
Max. Operating Temperature, °C(°F)	230(446)
Compression Set ⁴ @200°C, %	25

¹Not to be used for specification purposes

²Color variations may be observed in actual product. They are considered to be cosmetic and inherent as a result of curing process, not indicative for foreign matter and is not expected to have an adverse effect on the performance of the part in service.

³Even though elongation property is indicated, most perfluoroelastomer materials should not be stretched for optimal performance.

⁴ASTM D395-03, Method B

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CASE STUDY: Outperforms incumbent seal in various locations

Process: Producer CVD, VAT Pendulum Valve

Temperature: N/A

Chemistry: N/A

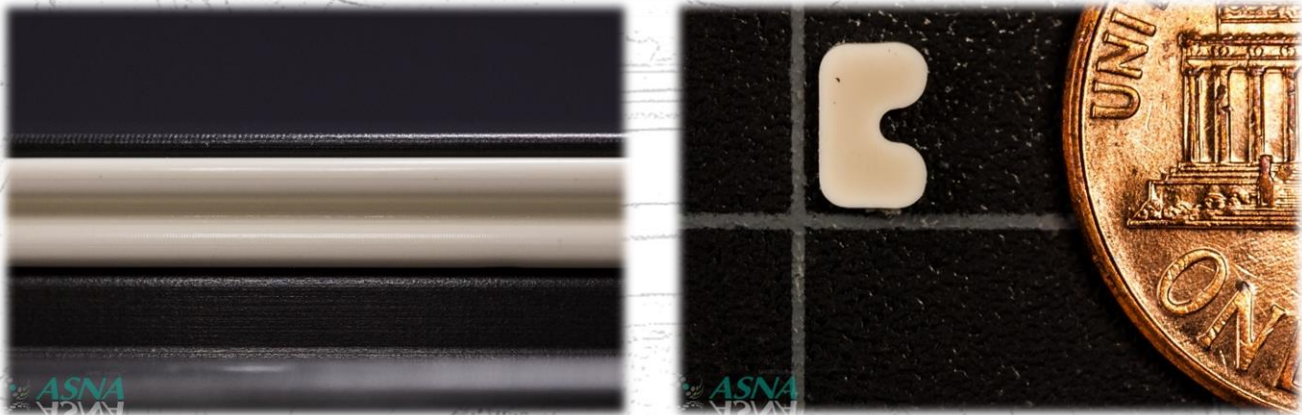
Current life: 1x PM cycle

Desired life: Increase PM Cycles



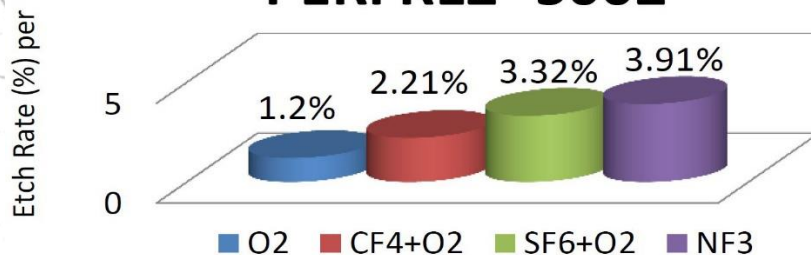
- A custom design Barrel Seal was introduced to replace the incumbent Viton O-Ring
- Life of seal was extended to 2-4 times, comparing to original one
- PERFREZ® 5002 seal exhibited no sign of chemical degradation nor mechanical abrasion.

Front and cross sectional view of used seal sample



Weight Loss (%) in Direct Plasma Exposure

PERFREZ® 5002



Test conditions: Direct plasma at 300 watts
Pressure@335motrr, Gas Flow@40sccm O₂
Pressure@378motrr, Gas Flow@5sccm O₂ and @35sccm CF₄
Pressure@370motrr, Gas Flow@5sccm O₂ and @35sccm SF₆
(Time@60minutes, Power@300watts)