# ASNA PERFREZ® XL11

**Excel chemical resistance and purity for semiconductor applications**

Technical Data Sheet (Jan 2019)

## Enhanced plasma resistance and physical strength

PERFREZ® XL11 offers superior plasma resistance especially aggressive fluorine based process. It also features the excellent physical properties with low CTE that mitigate any risk of extrusion due to thermal expansion.

## Features and Benefits

- Excellent oxygen and fluorine compatibilities
- Excellent plasma resistance
- Superior physical properties and low CTE
- Low out-gassing
- Ultra-low particle generation

## Compatible Semiconductor Process

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

## Applications:

- ✓ Bell Jar Seals
- ✓ Chamber Lid Seals
- ✓ Door Seals
- ✓ End Point Windows
- ✓ Gas Inlet Seals
- ✓ Isolator Valve Seals
- ✓ Slit Valves
- ✓ Window Seals

## Typical Physical Properties[1]

| | |
|---|---|
| Color[2] | *Light Beige* |
| Hardness, (Shore A) | 85 (+/-5) |
| Elongation at break[3], % | 142 |
| Tensile Strength, psi(MPa) | 2425(16.72) |
| Modulus @100%, psi(MPa) | 1708(11.78) |
| Coefficient of Thermal Expansion | $2.27 \times 10^{-4}$ |
| Min. Operating Temperature, °C(°F) | -20(-4) |
| Max. Operating Temperature, °C(°F) | 260(500) |

[1]Not to be used for specification purposes
[2]Color 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.
[3]Even though elongation property is indicated, most perfluoroelastomer materials should not be stretched for optimal performance.
[4]ASTM D395-03, Method B


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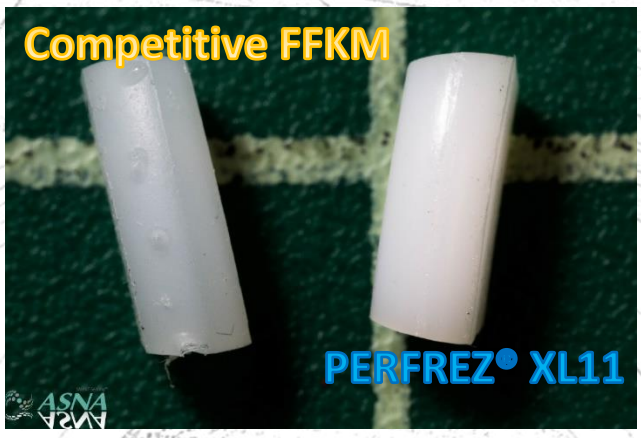
# CASE STUDY: Excellent Chemical/Plasma Resistance and low CTE

## Competitive FFKM (Before and after)

## PERFREZ® XL11 (Before and after)

**After use:** Competitor K5 material shows a high degree of discoloration.




- Competitive FFKM exhibits pitting due to blistering from the chemical attack on the surface.
- PERFREZ® XL11 shows minor chemical degradation on the surface.
- Poor design and high CTE value lead to severe extrusion.

| Properties | PERFREZ® XL11 | Competitive FFKM |
|---|---|---|
| Hardness(Shore A) | 85 | 76 |
| 100% Modulus, MPa | 11.78 | 9.6 |
| Tensile Strength, MPa | 16.72 | 16.4 |
| Elongation, % | 142 | 193 |
| **CTE, µm/m-°C** | **227** | **421** |
| Vol. ↑ in 200°C (Est.) | 12% | 24% |

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