Test Information

Nanofluor® Y75G

Exceptional Plasma Resistance and Reduced Risk of Particle Contamination

Highly plasma resistant elastomer seal materials have traditionally been synonymous with high inorganic filler content and/or, large micron+ sized filler particles with the obvious risks to precious wafers being processed through the fab. The alternative fully organic or unfilled materials reduce the risk of contamination however; the potential for particle generation is also not completely eliminated and such materials generically have higher chemical erosion rates in aggressive environments. The Nanofluor® range has been extended with a seal material that uses a specialised non-metallic, inorganic nano-filler that has been specifically compounded to ensure a highly uniform dispersion within the polymer matrix.

Features:

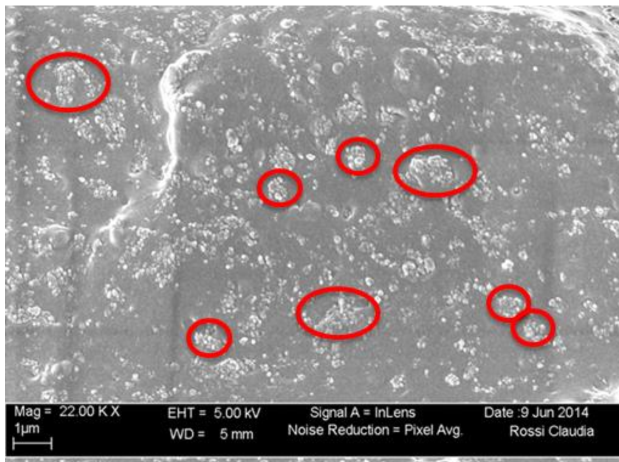
- Low filler content
- Nano-filler particle size 25nm-50nm
- Ultra-uniform filler dispersal
- Highly fluorinated base polymer
- High chemical and plasma resistance
- Ultra-low total trace metal content
- Data on process chemistry compatibility

Benefits

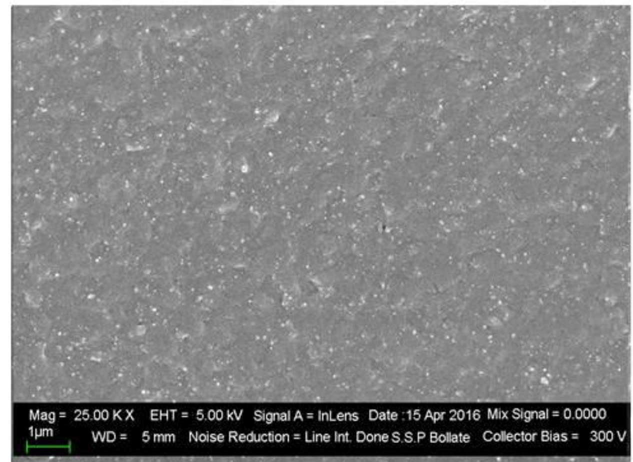
- Ultra-low erosion rates and low cost of consumables
- Minimal risk of particle contamination and yield loss
- Unchanged device electrical characteristics/specifications

Nanofluor® Y75G has been tested in a number of different chemical environments and systems in order to determine its relative performance against common elastomer brands. The material is particularly suited to process chemistries based on Cl_2, CxFy, SF_6, and O_2.

Filler Dispersion in NanoFluor Compound - SEM images of O-ring cross sections from unused parts



Example of poor filler dispersion in an alternative compound



Nanofluor® Y75G nano-filler dispersion

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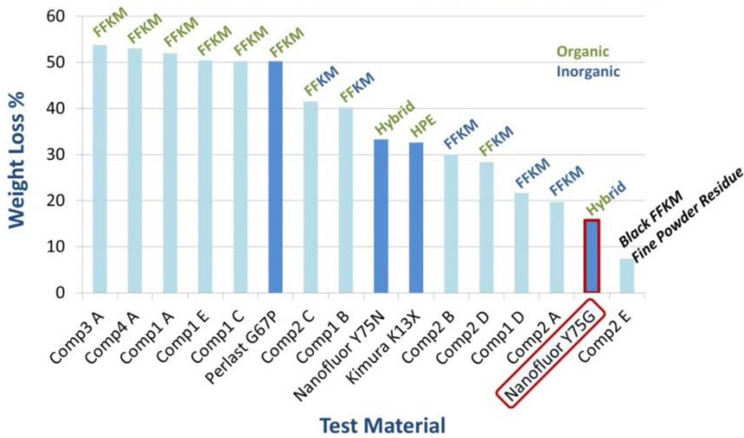
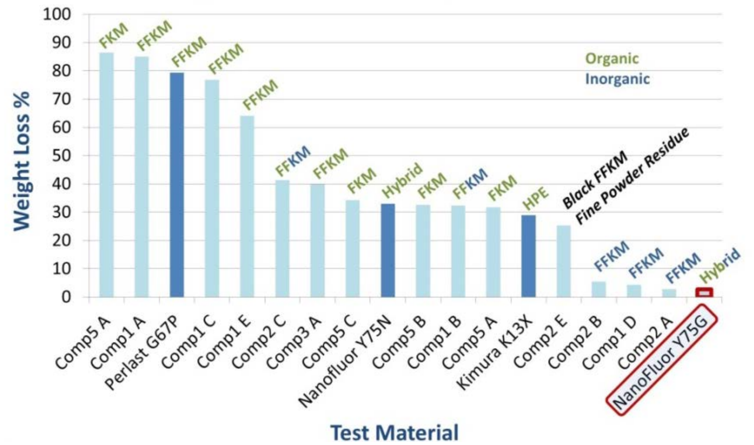
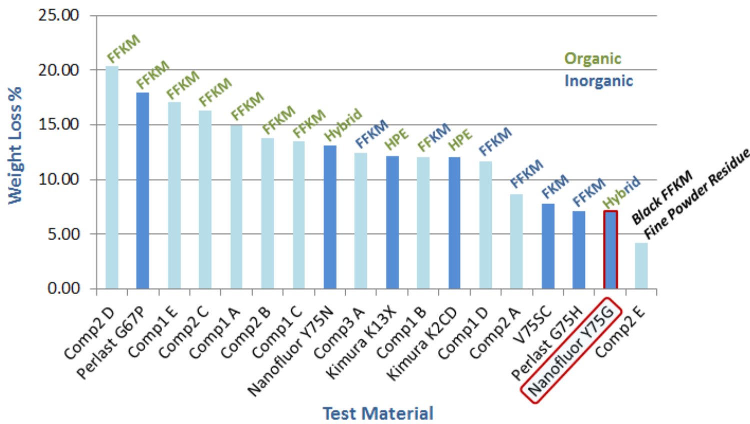
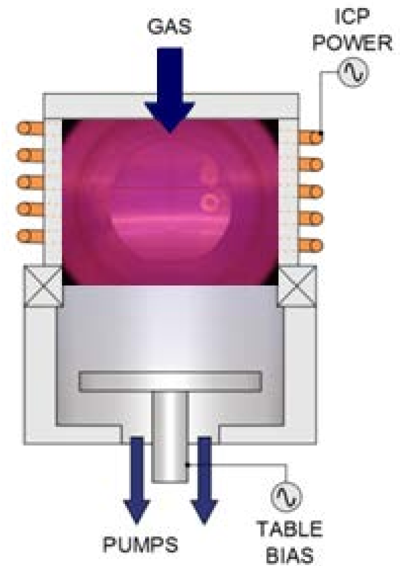
Nanofluor® Y75G - Plasma resistance for common process chemistries









Multiple plasma sources used in the generation of chemical compatibility data. In each case, substrate bias was not used during erosion testing.