NEW White Paper Available!

Gallagher Fluid Seals recently added a new white paper to its Resources Page, *Perfluoroelastomers for the Semiconductor Industry*, written by Russ Schnell. Below is an excerpt from the new white paper discussing the key reasons to choose perfluoroelastomers over fluoroelastomers for semiconductor manufacturing. You can download the white paper in its entirety by clicking on the thumbnail to the right.

Perfluoroelastomers (e.g. Kalrez® parts), often replace fluoroelastomer (e.g. Viton®) in semiconductor applications. However, even though perfluoroelastomers are the highest performance elastomers, there are still subtle differences between products. It is suggested that the elastomer supplier be contacted regarding the optimum product and seal design for specific applications. As mentioned above the key characteristics of perfluoroelastomers include:

- Lower offgassing than other elastomers, especially at temperatures above 200°C, which lowers the risk of product contamination.
- Better sealing force retention (lower compression set) at temperatures over 200°C, which is critical for longer service.
- Best overall chemical resistance of any elastomer family.
- Formulations with extremely low particle generation in aggressive process environments.
- Generally higher gas permeation than fluoroelastomers.
- Higher coefficient of thermal expansion when compared to fluoroelastomers. Proper seal design will account for this and optimize performance.
Perfluoroelastomers play a critical role in the semiconductor environment by providing longer service life than other elastomers in terms of offgassing, sealing force retention at high temperatures, low contamination and chemical resistance. Manufacturers rely on this type of performance to minimize the maintenance cycles on their equipment. Longer run times result in higher production capability and higher profits. Processing environments are becoming harsher and process temperatures are increasing to improve product throughput, and perfluoroelastomers are the product selected to meet these stringent processing requirements.

About the Author

Russell Schnell spent more than 37 years as an engineer with DuPont, the last 26 years as a Senior Application Engineer with the Kalrez® perfluoroelastomer parts business. Recognized for his expertise in elastomer applications, seal design and failure analysis, he provided technical support for a wide range of industries including: chemical processing, aerospace, oil and gas, pharmaceutical and semi-con. He created and conducted hundreds of training seminars and workshops in this field and was solely responsible for the development of the Kalrez® Application Guide software tool.

Russ received a Bachelor of Science in Chemical Engineering from Columbia University in New York and MBA from the University of Delaware.

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