Application Profile

DuPont™ Kalrez® 6190 – Sub-Fab Lines in IC Fabrication

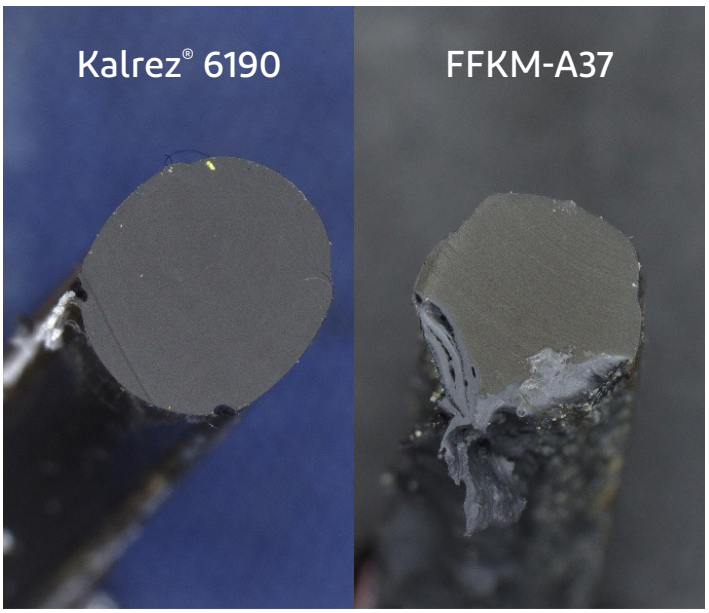
Case Report #027702

Reliable and steady operation of integrated circuits (IC) fabrication plants require seals in the entire process, including the sub-fab, to withstand aggressive gas species and high temperature reaching above 200 °C. A major 300mm fab was seeking an alternative seal to the incumbent FFKM for improved service life in one of its most difficult sub-fab applications. DuPont™ Kalrez® 6190 parts were tested at the customer's process and its performance exceeded the minimal requirement of 6 months of continuous service. Its reliability has lasted at least 12 months in use.

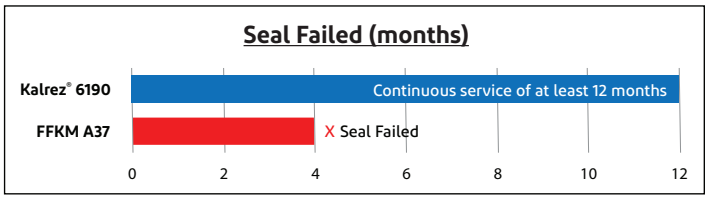
- **Process Chemistry:** High boiling point organosilanes
- **Cleaning chemistry:** Fluorinated gases (NF_3, SF_6) and by-products
- **Process conditions:** Sub-fab heat traced lines reaching above 200 °C
- **Incumbent solution:** FFKM-A37
- **Performance challenge:** At least 6 months of continuous service under high temperature

Kalrez® 6190 Benefits:

- Achieved at least 12 months in all seal positions of the most problematic line of the sub-fab by outperforming other competing seal materials.
- Maintained shape and physical properties with potential for durability beyond the initial requirement from the customer.
- Broad chemical and thermal resistance, offering outstanding reliability in the most difficult sub-fab applications.
- Allowed the customer to extend the preventative maintenance (PM) cycle of rate-limiting sub-fab seals, increase the line's uptime and reduce the total cost of ownership.



Samples of Kalrez® 6190 (at 6 months) and FFKM A37 (at 4 months). FFKM A37 experienced major degradation and leakage at the 4-month mark. Since specified, Kalrez® 6190 has been consistently reaching or exceeding 12 months seal life.



The performance is based on tests performed by the customer. This data should not be used to establish specification limits.

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