

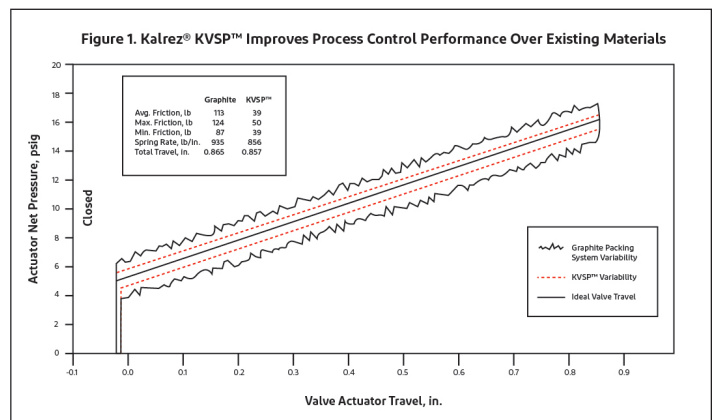
# DuPont™ Kalrez® Valve Stem Packing (KVSP™): Reducing Fugitive Emissions

DuPont™ Kalrez® Valve Stem Packing (KVSP™), is a combination of chemically-resistant DuPont™ Kalrez® perfluoroelastomer (FFKM) parts and DuPont™ Vespel® V-rings that can **reduce stem-based fugitive emissions** and **improve process control** throughout the lifespan of the valve.

Fugitive emissions remain a concern for many industries due to their potential to create environmental harm and incur economic costs. KVSP™ has the ability to significantly reduce stem-based fugitive emissions of methane and can also be used for handling other gasses including hydrogen.

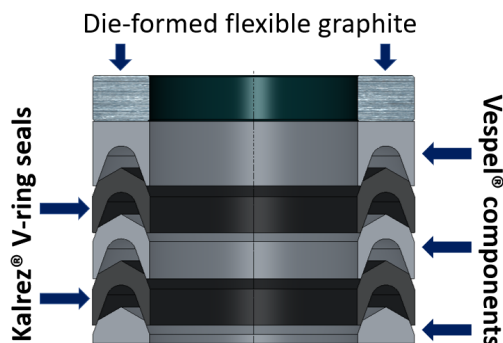
KVSP™ systems increase a valve's ability to react quickly and smoothly to process changes (Figure 1).

KVSP™ reduces process control variability to the control system's capability, resulting in improvements to both yield and product quality on specification.



## Minimize fugitive emissions while increasing efficiency and cost savings

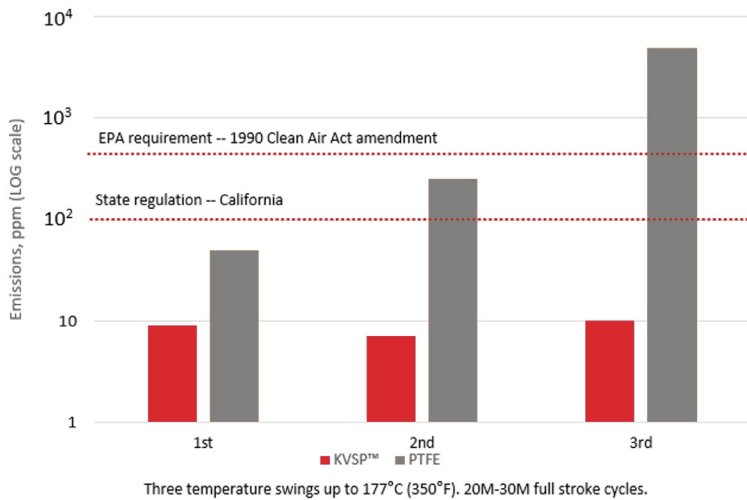
- KVSP™ systems provide performance that approaches zero leakage. This is verified using EPA Method 21 for the determination of leakage of hydrocarbon-based volatile organic compounds (VOCs).
- KVSP™ requires smaller valve actuators than those required for graphite packing because it requires less compressive force and has much lower valve stem friction, leading to significant cost savings.
- KVSP™ reduces the frequency of costly repairs or replacements due to its lower loading (lower wear rate), extending the lifespan of the valve and without needing regular adjustment.



DuPont™ KVSP™ kits also can include an additional flexible graphite ring for API 607 fire safe performance.



### Controlling Fugitive Emissions: DuPont™ KVSP™ vs PTFE Packing System (EPA Method 21)



Test repeated three times according to EPA Method 21. The DuPont™ KVSP™ system maintains excellent sealing performance throughout all three thermal cycles, while PTFE valve packing tends to undergo creep at operating pressure and temperature resulting in increased fugitive emissions. The final measurement reading was around 5,000 ppm, more than 20 times higher than the EPA's 500 ppm regulation for compliance with the Clean Air Act.

### Valve Compatibility

- KVSP™ is available in 3- and 5-piece kits to meet the sizing requirements of standard OEM rising-stem control valves

### Service Temperature

- Rated for continuous service from -20 °C to 260 °C (-4 °F to 500 °F)

### Installation

- Drop-in system: no valve modifications required
- Live loading preferred

### Benefits

- Minimization of fugitive emissions over a long service life
- Lower actuator cost due to lower actuation force needed compared to graphite solutions
- Improved process control due to better alignment between the control system and valve response, thanks to low stem friction

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