

Valve Packing: Fugitive Emissions Control Products

9000-EVSP LE

Style 9000 EVSP LE is configured to optimize performance in fugitive emission application. This field proven set design allows a precise fit and an easy installation.



SPECIFICATIONS

Construction GRAPH-LOCK® rings of high-purity diamond texturized graphite tape, in cup and cone configuration; end rings made from Garlock 1303-FEP (Inconel wire reinforced) with active and passive corrosion inhibitors.

Temperature -328°F (-200°C) to 850°F (455°C) atmosphere to 1,200°F (650°C) steam

pH range 0-14 (except strong oxidizers)

Pressure to 10,000 psi plus (690 bar)

ADVANTAGES & FEATURES

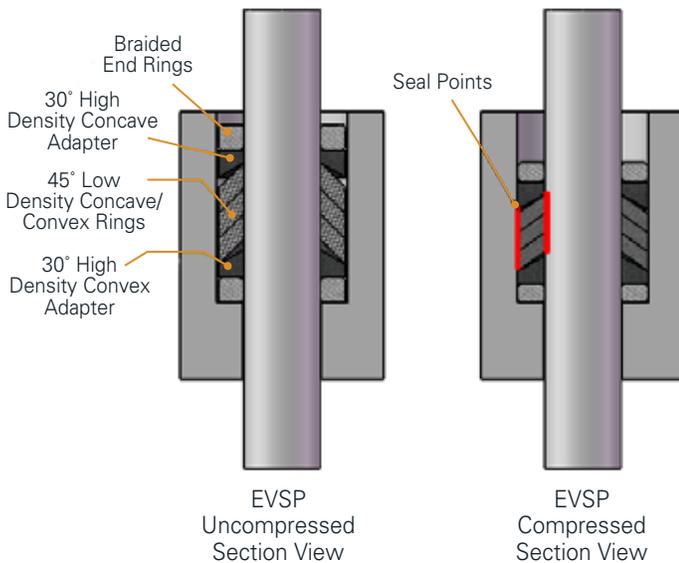
Forgiveness Our ring set with patented cup and cone design, delivers higher precision fit to optimize field performance.

Cost effectiveness The EVSP design permits a controlled radial expansion to create an effective seal against both valve stem and bore. This engineered set can be used to seal older more worn valves. Emission compliance can be achieved without necessarily replacing valves or the maintenance expense of bringing the valves back to manufacturer's specifications.

Safety This Style is fire safety tested and chemical resistant. It is well recognized in hydrocarbon and chemical processing industries as a reliable and ideally suited solution for low emission valve stem sealing.

ENVIRONMENTAL VALUE

» This Garlock valve stem packing product has proven itself to be an efficient and reliable solution to improve air quality by lowering VOC (volatile organic compounds) and VHAP (volatile hazardous air pollutant) emissions.



Fugitive Emissions Standard compliance:

ISO-15848-1 API-622, 2nd Edition

* Patent #4,328,974

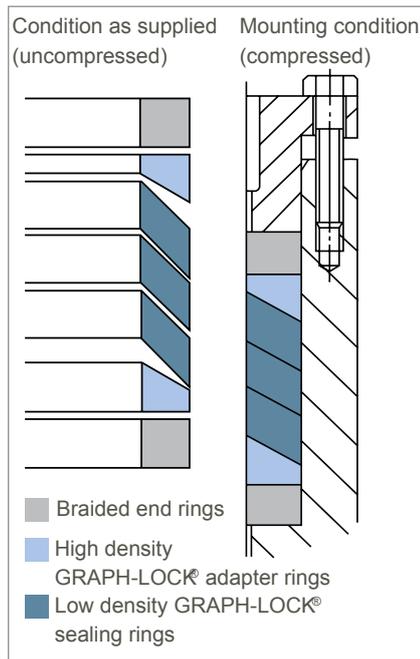
9000 EVSP Valve Stem Packing

Valve stem packing for emission reduction

The Cup and Cone configuration of adapter and sealing rings allows a high radial expansion of both inner and outer diameters, a compression with low force requirements, which reduces valve stem friction. A readjustment of the packing by proven volume-loss (by packing or valve stem damage) is possible.

Sealing structure

- » Three low density Cup and Cone GRAPH-LOCK® sealing rings
- » Two high density Cup and Cone GRAPH-LOCK® adapter rings
- » Two pure graphite scraper and anti-extrusion braided end rings (Inconel wire reinforced 1303-FEP, treated with passive and active corrosion inhibitor)
- » Patented "cup and cone" design permits selective component compression and controlled radial flow for effective sealing of I.D. and O.D.
- » End rings act as wiper rings to restrict graphite particle transfer, prevent extrusion and provide extra resiliency
- » Patented cup and cone design can provide sealability in valves as shallow as three-ring cross sections



Benefits 9000 EVSP Valve Stem Packing

- » Complies with VOC regulations to API 622
- » Fire safe according to API 607 and API 589
- » Low friction

Style 9000 EVSP Simplified - **Expandable Valve Stem Packing** - is designed to provide optimum sealability in even the most severe environments.



At the Garlock on site fire test facility, valves and sealing materials are functionally tested in the most extreme applications. 9000 EVSP Simplified meets these stringent fire test standards.

The main sealing components of the 9000 EVSP Simplified are manufactured from Garlock GRAPH-LOCK®. These high purity flexible rings are die-formed in a "cup and cone" configuration with varying densities. This innovative design allows selective component compression and controlled radial flow resulting in effective sealing on both the I.D. and O.D.*

End rings are 1303-FEP Inconel wire reinforced die formed treated flexible graphite.

*Patent #4,328,974



Selection criteria for your valve sealing system

SEALABILITY

Exceeds the most stringent VOC regulations and hazardous emission standards

FIRE SAFETY

Passes API 607 and API 589
Passes Garlock kerosene fire test

CHEMICAL COMPATIBILITY

0-14 pH range (except strong oxidizers)

TEMPERATURE CAPABILITY

+1200° F (+650° C) steam
+850° F (455° C) atmosphere

PRESSURE CAPABILITY

10,000 psi plus

RESISTANCE TO VOLUME LOSS

Testing by AECL confirms less than 2% in-service consolidation

SEALING CAPABILITY UNDER WORN VALVE CONDITIONS

More than double the radial expansion capabilities of conventional flat ring set design

REDUCED FRICTION CAPABILITY

15%-25% less than flat ring sets

STYLE 1303-FEP* *

Style 1303-FEP is manufactured from a proprietary yarn consisting of several strands of high purity GRAPH-LOCK® contained by an Inconel filament jacket. This Inconel* wire filament is only 0.004" diameter, making the finished braid non-scoring and thermally conductive.

Style 1303-FEP has been successfully fire-tested to API 589 standards at API 607 temperatures

- Provides compliance to the most stringent emission regulations in VOC's and VHAP's.
- Has been tested to the most stringent fugitive emission requirements.
 - Achieving ISO 15848-1 class B emissions tightness.
 - Excellent results in the emissions test procedure of API-622 2nd Ed. (Test reports available upon request.)
- Exhibited less weight loss in hot air volume loss tests than all other spool stock packings tested that were developed for similar services to the 1303-FEP.
- Style 1303-FEP is self-lubricating, non-hardening, dimensionally stable and impervious to gases and fluids.
- The graphite foil that makes up 1303-FEP is treated with Phosphorus as an inorganic passive corrosion inhibitor.

TEMPERATURE: -328°F to +1200°F (-200°C to +650°C) in non-oxidizing media
+850°F(+455°C) in air

Consult Garlock Technical Services for applications in excess of 850 °F (455°C).

PRESSURE: 4500 psi (310 Bar)

PH RANGE: 0 - 14 (except strong oxidizers)

CONSTRUCTION: Braided Flexible GRAPH-LOCK® with Inconel filament.
Furnished with a zinc dust surface coating as an active corrosion inhibitor (unless otherwise specified).

* Trademark of Inco Alloys International, Inc.

** Patent #4,994,303