

PREVENTING ASPHALT LEAKAGE

PACKED GLAND

Most asphalt pumps use a packed gland to minimize leakage along the shaft. The benefits of a packed gland are that it offers the lowest cost among the seal options, greatest simplicity, and greatest reliability, especially if pumps are occasionally started before the asphalt is completely melted inside. Packing handles any viscosity and temperature (using high temp packing above 500°F).

The gland must be loose enough, though, to allow some leakage for cooling and lubrication, which is the primary negative. A rate of one drop per minute is common. Leaked asphalt can be collected and recycled using a trough and bucket. Viking asphalt pumps offering packing include the 34 Series, 224A and 124E Series.

SHAFT SEAL AND SEALLESS OPTIONS

Mechanical seals, lip seals and sealless mag drives prevent most liquid leakage at the shaft. Mechanical seals generally feature a stationary face mounted to the pump and a rotating face mounted to the shaft, held in contact by a spring to prevent leakage between the two faces. Most mechanical seals are not suitable for asphalt because the faces can stick together during downtime and be damaged at startup. All mechanical seals are more susceptible to damage from cold start, overpressure or operator error than packing, so it's critical to ensure that adequate temperature is achieved before starting pump. Viking has proven out a number of seal types on roofing asphalts to provide assurance of suitability in the application.

Seal options for clean asphalt (flux, blown, PMA, unfilled seal down and adhesive) include:

- Cartridge triple lip seal with low-pressure steam quench – steam helps ensure that asphalt in the seal is melted prior to startup
- Cartridge single mechanical seal with low-pressure steam quench – steam helps ensure the seal faces don't stick together at startup
- Sealless Mag Drive - infrequently used on asphalt due to higher cost, these pumps, in the 8124A series, prevent leakage by hermetically sealing asphalt in the pump, and using a magnetic coupling to turn the drive shaft

Seal options for filled asphalt (coating asphalt, filled seal down, filled adhesive) include:

- Behind-the-rotor, abrasive liquid single mechanical seal on 4224B Series pumps – drive pins help ensure the stationary seat stays stationary and the rotary seat rotates on startup, with tungsten carbide faces for abrasion resistance (available from H through QS sizes)
- Cartridge dual metal bellows seals with hard inboard faces and nitrogen-pressured barrier fluid on the 4224A and 4124E Series (note that 224A & 124E Series packed pumps can be easily be converted to 4224A & 4124E mechanical seal pumps in the field, and vice versa)