MECHANICAL SEAL SUPPORT SYSTEMS

ASSET OPTIMIZATION FOR INCREASED PRODUCTIVITY
Chesterton® Mechanical Seal Support Systems are designed to optimize the seal’s operating environment in order to increase its reliability and Mean Time Between Repair (MTBR).

The fluid film on which the seal operates is critical to its life expectancy; slurries, hot liquids, crystallizing solutions, and high viscosity and solidifying media often require adequately specified seal support systems in order for the mechanical seal to function correctly. Selecting the correct support system is crucial. The seal and equipment on which the seal support system is being operated should be evaluated.

**Single Seals**

Single seals operating in harsh processes are most commonly configured to seal flush systems such as Plan 32, Plan 33, or variants thereof, which utilize plant water supplies as a source of clean, cool flush. The plant water line is often connected directly to the seal or stuffing box chamber without adequate controls. Excessive water consumption and/or accidental loss of flush can result in premature seal failure. Our Flow Guardian™ provides control and indication of flush supply so that the mechanical seal can operate in an optimal environment.

**Dual Seals**

**Water Compatible Processes**

Dual seals are selected when there is a need to modify the seal’s operating environment and/or contain the process media in the event of a fault condition.

**Entry level piping plans increase operating costs**

Many dual mechanical seals are configured to Plan 62, simply using plant water to cool and lubricate the seal before discharge to the drain. Fluctuating water pressure, poor water quality, and lack of water flow all contribute to reducing the seal’s MTBR. Cost is often a reason for reducing the flow of water as the water consumption can be excessive on a plant-wide scale.

**Closed Loop - measurable efficiency**

Plan 53P, the Chesterton WSS (Water Saving System) connects directly between the plant water line and the mechanical seal, creating a closed circuit of water to cool and lubricate the seal without discharging to the drain. Savings in water consumption compared to an API or Piping Plan 62 configuration can be measured and are significant.

**Other Processes**

For dual seals operating in processes not compatible with water, we offer two support systems designed to increase dual mechanical seal MTBR.

The Chesterton BSS (Buffer Support System) provides non-pressurized isolation and support for processes which cannot tolerate product contamination; these are typically food products and fine chemicals. The Chesterton PSS (Pressurized Support System) provides pressurized isolation and support for processes where a compatible barrier fluid can be utilized to keep the seal faces clean and free from the process media.

For both the BSS and PSS solutions, the selected barrier fluid must be of a suitable viscosity to ensure that circulation takes place. Our range of dual seals features internal pumping rings to aid circulation.
**WSS Water Saving System**

**Plan 53P Automatic Water Support Tank**

Easy to install, complete solution with minimal water consumption for reliable operation of dual seals.

The Chesterton Water Saving System (WSS) is a complete seal support system designed to maintain water barrier pressure and levels without maintenance. Containing all of the equipment required for connection to a dual seal, the Water Saving System is easy to install.

**Water Saving System Configuration**

Featuring a pressure regulator, non-return valve, and vent valve, the Water Saving System isolates the dual seal from fluctuations in plant water supplies, optimizing the seal's operating environment and increasing seal reliability. A flow indicator provides a visual indication of a fault condition in the dual seal.

The WSS can be enhanced further with a range of pressure and flow switches to alert operators to a fault condition.

The water is circulated to and from the seal by the thermosyphon effect and the mechanical seal's internal pumping ring, a standard feature of Chesterton Dual Seals.

**Recommended Industry Applications**
- Chemical
- Pharmaceutical
- Food and beverage
- Pulp and paper
- Mining

**Operating Principle for WSS**

Water from the plant water line enters the system through the non-return valve. The pressure of the barrier fluid in the tank can be set via the pressure regulator.

Once at the correct pressure, the plant water line remains connected to automatically top up and maintain the pressure. Water consumption is minimal.

The barrier fluid is circulated to and from the seal by the thermosyphon effect.

**Connections**

- Non-Return Valve (Water Line Connection)
- To the Mechanical Seal
- From the Mechanical Seal

**Technical Data**

- **Tank Capacity**: 12 liters (3.2 gallons) Maximum
- **Tank Operating Pressure**: 17.2 bar Maximum (250 psi)
- **Tank Material**: 304L/1.4307
- **Cooling Capacity**: 400 W
- **Auxiliary Connection**: 1 x 1" NPT and 1 x 1/2" NPT

**Components (Included)**

- **Water Line Connection**: 1/4" NPT Female
- **Pressure Gauge**: 0-11 bar g (0-160 psi) 304 Stainless Steel Case, Al Bronze Wetted
- **Pressure Regulator**: 0-9 bar g (0-125 psi) Brass
- **Flow Indicator**: Brass
- **Drain Valve**: 1/2" NPT Brass
- **Hoses Kit**: 1 x 42" and 1 x 48" Nylon 1/2" OD
- **Seal Connections Kit**: 2 x 1/2" NPT - Straight Push-in Connectors Brass

**Applicable Standards and Approvals**

- ASME U Stamp

**Ordering Codes**

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Code</th>
<th>Item Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tank</td>
<td>Water Saving System complete with all the Components</td>
<td>WSS</td>
<td>381770</td>
</tr>
</tbody>
</table>

**Accessories**

- **Filters**: In-Line Water Filter Assembly complete with Isolation Valves - Brass Fittings
- **Tank Stands**: Telescopic Vertically and Horizontally Adjustable Stand - Stainless Steel
- **Tank Piping Kits**: Stainless Steel Braided Hose Kit 1 x 42" and 1 x 48" with Fittings
- **Components (Included)**
- **Pressure Gauges**: 0-11 bar g (0-160 psi) 304 Stainless Steel Case, Al Bronze Wetted
- **Pressure Regulator**: 0-9 bar g (0-125 psi) Brass
- **Flow Indicator**: Brass
- **Drain Valve**: 1/2" NPT Brass
- **Hoses Kit**: 1 x 42" and 1 x 48" Nylon 1/2" OD
- **Seal Connections Kit**: 2 x 1/2" NPT - Straight Push-in Connectors Brass
- **Applicable Standards and Approvals**
- ASME U Stamp

**Components**

- **Connections**: Non-Return Valve (Water Line Connection)
- **To the Mechanical Seal
- **From the Mechanical Seal

**Recommended Industry Applications**

- Chemical
- Pharmaceutical
- Food and beverage
- Pulp and paper
- Mining

**Plan 53P Automatic Water Support Tank**

Easy to install, complete solution with minimal water consumption for reliable operation of dual seals.

The Chesterton Water Saving System (WSS) is a complete seal support system designed to maintain water barrier pressure and levels without maintenance. Containing all of the equipment required for connection to a dual seal, the Water Saving System is easy to install.

**Water Saving System Configuration**

Featuring a pressure regulator, non-return valve, and vent valve, the Water Saving System isolates the dual seal from fluctuations in plant water supplies, optimizing the seal's operating environment and increasing seal reliability. A flow indicator provides a visual indication of a fault condition in the dual seal.

The WSS can be enhanced further with a range of pressure and flow switches to alert operators to a fault condition.

The water is circulated to and from the seal by the thermosyphon effect and the mechanical seal's internal pumping ring, a standard feature of Chesterton Dual Seals.

**Recommended Industry Applications**

- Chemical
- Pharmaceutical
- Food and beverage
- Pulp and paper
- Mining

**Operating Principle for WSS**

Water from the plant water line enters the system through the non-return valve. The pressure of the barrier fluid in the tank can be set via the pressure regulator.

Once at the correct pressure, the plant water line remains connected to automatically top up and maintain the pressure. Water consumption is minimal.

The barrier fluid is circulated to and from the seal by the thermosyphon effect.

**Connections**

- Non-Return Valve (Water Line Connection)
- To the Mechanical Seal
- From the Mechanical Seal

**Technical Data**

- **Tank Capacity**: 12 liters (3.2 gallons) Maximum
- **Tank Operating Pressure**: 17.2 bar Maximum (250 psi)
- **Tank Material**: 304L/1.4307
- **Cooling Capacity**: 400 W
- **Auxiliary Connection**: 1 x 1" NPT and 1 x 1/2" NPT

**Components (Included)**

- **Water Line Connection**: 1/4" NPT Female
- **Pressure Gauge**: 0-11 bar g (0-160 psi) 304 Stainless Steel Case, Al Bronze Wetted
- **Pressure Regulator**: 0-9 bar g (0-125 psi) Brass
- **Flow Indicator**: Brass
- **Drain Valve**: 1/2" NPT Brass
- **Hoses Kit**: 1 x 42" and 1 x 48" Nylon 1/2" OD
- **Seal Connections Kit**: 2 x 1/2" NPT - Straight Push-in Connectors Brass
- **Applicable Standards and Approvals**
- ASME U Stamp

**Ordering Codes**

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<td>WSS</td>
<td>381770</td>
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</table>

**Accessories**

- **Filters**: In-Line Water Filter Assembly complete with Isolation Valves - Brass Fittings
- **Tank Stands**: Telescopic Vertically and Horizontally Adjustable Stand - Stainless Steel
- **Tank Piping Kits**: Stainless Steel Braided Hose Kit 1 x 42" and 1 x 48" with Fittings
- **Components (Included)**
- **Pressure Gauges**: 0-11 bar g (0-160 psi) 304 Stainless Steel Case, Al Bronze Wetted
- **Pressure Regulator**: 0-9 bar g (0-125 psi) Brass
- **Flow Indicator**: Brass
- **Drain Valve**: 1/2" NPT Brass
- **Hoses Kit**: 1 x 42" and 1 x 48" Nylon 1/2" OD
- **Seal Connections Kit**: 2 x 1/2" NPT - Straight Push-in Connectors Brass
- **Applicable Standards and Approvals**
- ASME U Stamp
BSS Buffer Support System

Plan 52 Non-Pressurized Tank

Easy to install, complete, non-pressurized solution for reliable operation of dual seals.

The Chesterton Buffer Support System (BSS) is a complete solution for the environmental support of dual seals where product contamination from support fluid cannot be tolerated.

Buffer Support System Configuration

Supplied ready to install the BSS is preconfigured to allow simple connection and non-pressurized support to a dual seal. A dedicated fill valve allows quick and easy commissioning of the seal and system arrangement.

The BSS can be enhanced further with a complete range of accessories designed for easy configuration and reduced maintenance. Intrinsically safe instrumentation is also available.

The support fluid is circulated to and from the seal by the thermosyphon effect and the mechanical seal’s internal pumping ring, a standard feature of Chesterton Dual Seals.

Technical Data

- **Tank Capacity**: 12 liters (3.2 gallons) Maximum
- **Tank Operating Pressure**: 17.2 bar Maximum (250 psi)
- **Tank Material**: 304L/1.4307
- **Cooling Capacity**: 400 W Tank Only
- **Additional Capacity**: 1.5 kW with Cooling Coil
- **Auxiliary Connection**: 1 x 2” NPT  and 1 x 1/2” NPT
- **Components (Included)**:
  - Level Gauge
  - Sight Glass
  - Fluid Line Connection
  - 1/2” NPT Female
  - Pressure Gauge
  - 0-20 bar (0-300 psig)
  - 304 Stainless Steel Case, Al Bronze Wetted
  - Fill Valve
  - 1/2” NPT Brass
  - Drain Valve
  - 1/2” NPT Brass
  - Hoses
  - Kit: 1 x 42” and 1 x 48” Nylon 1/2” OD
  - Seal Connections
  - Kit: 2 x 1/2” NPT - Straight Push-in Connectors Brass
- **Applicable Standards and Approvals**: ASME U Stamp

Recommended Industry Applications

- Chemical
- Pharmaceutical
- Food and beverage
- Pulp and paper

Operating Principle for BSS

Connect the system to the seal and add the support fluid via the fill valve until it is at the required level on the glass.

The support fluid is circulated by thermosyphon effect or the mechanical seal’s pumping ring.

Ordering Codes

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Code</th>
<th>Item Number</th>
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<td>BSS</td>
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<tr>
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<td>Buffer Support System complete with Cooling Coil</td>
<td>BSSC</td>
<td>381762</td>
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<td>Tank Stands</td>
<td>Telescopic Vertically and Horizontally Adjustable Stand - Stainless Steel</td>
<td>XT</td>
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<tr>
<td>Tank Piping Kits</td>
<td>Stainless Steel Braided Hose Kit 1 x 42” and 1 x 48” with Fittings</td>
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<tr>
<td></td>
<td>Finned Tube Kit 1 x 24” with Fittings</td>
<td>FT</td>
<td>382054</td>
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<tr>
<td>Seal Connector Kits</td>
<td>Seal Connector Kit: 2 x 1/4” NPT Straight 1/2” Push In Tube - Brass</td>
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<td>Seal Connector Kit: 2 x 1/4” NPT Swivel Elbow 1/2” Push In Tube - Brass</td>
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<tr>
<td>Instrumentation</td>
<td>High/Low Level Switch for Nonhazardous Area</td>
<td>LT</td>
<td>382057</td>
</tr>
<tr>
<td></td>
<td>High/Low Level Switch, Intrinsically Safe</td>
<td>LW</td>
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<td>High/Low Pressure Switch for Nonhazardous Area 1-20 bar (15-300 psi) Kit</td>
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<td>High/Low Pressure Switch, Intrinsically Safe 1-20 bar (15-300 psi) Kit</td>
<td>PU</td>
<td>382655</td>
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<tr>
<td>Forced Circulation</td>
<td>Circulation Pump</td>
<td>CP</td>
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</table>

All dimensions are in mm (inches) and are approximate.
**PSS Pressurized Support System**

**Plan 53A Standard Tank**

*Easy to install, complete, pressurized solution for reliable operation of dual seals.*

The Chesterton Pressurized Support System (PSS) is a complete solution for the support of dual seals where product leakage cannot be tolerated.

**Pressurized Support System Configuration**

Supplied ready to install, the PSS features a non-return valve, pressure regulator with gauge, and pressure relief valve. A dedicated fill valve allows quick and easy commissioning of the seal and system arrangement.

The PSS can be enhanced further with a complete range of accessories designed for easy configuration and reduced maintenance. Intrinsically safe level and pressure switches are also available.

The support fluid is circulated to and from the seal by the thermosyphon effect and the mechanical seal’s internal pumping ring, a standard feature of Chesterton Dual Mechanical Cartridge Seals.

### Technical Data

<table>
<thead>
<tr>
<th>Tank Capacity</th>
<th>12 liters (3.2 gallons) Maximum 9 liters (2.4 gallons) Operating</th>
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<tr>
<td>Tank Operating Pressure</td>
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<td>Tank Material</td>
<td>304L/1.4307</td>
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<tr>
<td>Cooling Capacity</td>
<td>400 W Tank Only, 1.5 kW with Cooling Coil, 4 kW with Cooling Coil and Circulation Pump</td>
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<tr>
<td>Auxiliary Connection</td>
<td>1 x 2” NPT and 1 x 1/2” NPT</td>
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</table>

**Recommended Industry Applications**

- Chemical
- Pharmaceutical
- Food and beverage
- Pulp and paper

- Preconfigured system, simplified ordering process
- Simple maintenance of fluid level
- Standard Plan 53A tank

**Ordering Codes**

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
<th>Code</th>
<th>Item Number</th>
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<tbody>
<tr>
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<td>PSSC</td>
<td>381766</td>
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<tr>
<td>Accessories</td>
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<tr>
<td>Tank Stands</td>
<td>Telescopic Vertically and Horizontally Adjustable Stand - Stainless Steel</td>
<td>XT</td>
<td>377273</td>
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<tr>
<td>Tank Piping Kits</td>
<td>Stainless Steel Braided Hose Kit 1 x 42” and 1 x 48” with Fittings</td>
<td>BH</td>
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<td>Finned Tube Kit 1 x 24” with Fittings</td>
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<td>Seal Connector Kits</td>
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<td>Seal Connector Kit: 2 x 1/2” NPT Straight 1/2” Push In Tube - Brass</td>
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<td>Seal Connector Kit: 2 x 3/8” NPT Swivel Elbow 1/2” Push In Tube - Brass</td>
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<td>LT</td>
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<td>Refill Pump</td>
<td>Hand Pump Assembly - Stainless Steel</td>
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<td>Forced Circulation</td>
<td>Circulation Pump</td>
<td>CP</td>
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</table>
Flow Guardian™

Plan 32/33S/54DM

Specifically designed to supply uninterrupted, regulated, seal flush water and deliver operational efficiency to the pump population.

Managing flow rates while regulating important pressure differentials is possible. Costly seal failures are reduced while assisting in-plant water conservation initiatives.

Flow Guardian Selection

There is a Flow Guardian for every application. The DP50 Dual Flow Guardian is designed to measure flow entering and exiting a dual seal installation. This capability allows for early detection of leakage into the process stream as a result of inboard seal failure.

The SP50 Single Flow Guardian can also regulate flow and pressure and is ideal for single seal installation or when inboard seal failure detection is of less importance.

Technical Data

<table>
<thead>
<tr>
<th>Material of Construction</th>
<th>Operating Parameters</th>
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<tbody>
<tr>
<td>Flowmeter Tube</td>
<td>Polysulfone (PSU)</td>
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<tr>
<td>Body of Unit</td>
<td>Polyoxymethylene (POM)</td>
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<tr>
<td>O-Rings</td>
<td>Fluorocarbon (FKM)</td>
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<td>Pressure Gauge</td>
<td>Oil filled with 316 Stainless Steel Case and Wetted</td>
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<tr>
<td>Pressure Regulating Valve</td>
<td>316 Stainless Steel / EN 1.4401</td>
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<td>Flow Rate Regulating Valve</td>
<td>316 Stainless Steel / EN 1.4401</td>
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<tr>
<td>Clean-out Plugs</td>
<td>1/2” - 3/8” Tube Fittings (for Compression Connections) 316 Optional Barb Fittings</td>
</tr>
<tr>
<td>Mounting Bracket</td>
<td>316 Stainless Steel / EN 1.4401</td>
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*Seal pressure capabilities are dependent on the fluid sealed, temperature, speed, and seal face combinations.

For operation outside the limits and additional materials, consult Chesterton Mechanical Seal Engineering.

Ordering Codes

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
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<tr>
<td>SP50 with Compression Connectors</td>
<td>Single Tube with Pressure Valve</td>
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<tr>
<td>SP50 with Hose Barb Connector</td>
<td>Single Tube with Pressure Valve and Plunger Cleaner</td>
<td>199805</td>
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<tr>
<td>DP50 with Compression Connectors</td>
<td>Dual Tube with Pressure Valve</td>
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<tr>
<td>DP50 with Hose Barb Connector</td>
<td>Dual Tube with Pressure Valve and Plunger Cleaner</td>
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Intelli-Flow™ HT

Water Saver

Features a thermally activated valve that automatically drains hot barrier fluid (only when necessary) to keep dual seals running cool and reliable. Valve opening temperature preset to work with 520 Seals.

Technical Data

<table>
<thead>
<tr>
<th>Material of Construction</th>
<th>Operating Parameters</th>
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<tbody>
<tr>
<td>Body</td>
<td>303 Stainless Steel / EN 1.4305</td>
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<tr>
<td>Bushing</td>
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<tr>
<td>Hose Barb Fitting</td>
<td>316 Stainless Steel / EN 1.4401</td>
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<tr>
<td>Intelli-Flow HT</td>
<td>Water Saver Assembly with Integrated Flush Housing</td>
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The use of dual seals in all industries is on the rise due to the apparent and demonstrated benefits and increased off-the-shelf availability. Increased focus on reliability, safety, and environmental impacts are the key drivers during the selection process.

As we have the ability to introduce a fluid between the inboard and outboard faces of a dual seal, this offers us the opportunity to modify the operating environment of the seal and extend its useful life. Buffer and barrier fluids can be used to provide lubrication, remove process and frictional heat, and combat issues associated with cavitation and dry running. Barrier fluids can prevent process media from causing damage to the inboard mechanical seal faces by being pressurized 1 to 2 bar g (14 to 28 psig) above the sealing chamber pressure.

It is important to select the correct fluid to be used as a buffer or barrier fluid. The most suitable fluids will have the following properties:

- Compatible with the process media
- Non-flammable
- Safe to store, handle, and use
- Stable at ambient temperature
- Compatible with the seal and storage tank materials
- Does not contain hazardous, harmful, or regulated pollutants
- Good rates of flow at the required operating temperatures
- Non-foaming or gas absorbing
- Excellent lubricity for the selected seal face materials
- Good rates of heat transfer

Water

There are several benefits associated with using water as a barrier or buffer fluid. Water’s thermal conductivity is around three times greater than that of oils and it has double the specific heat. This makes water a great fluid for transporting heat away from mechanical seals. Temperature management is important when using water as a barrier fluid as its viscosity reduces at elevated temperatures, limiting its usefulness as a lubricant. Care must also be taken to prevent freezing in cold conditions. This is the primary reason to prepare a water glycol solution.

Oils

Oils offer greater thermal stability at elevated temperatures compared to water and are not susceptible to freezing. Oils also provide exceptional lubrication to the mechanical seal faces and offer the user increased mechanical seal life. There are few material compatibility issues with using oils, however the use of oils with carbon seal faces is not generally recommended. Some users of traditional automotive and transmission oils have experienced mixed results when utilizing them as a barrier fluid, the primary reason for this is because of the complex mix of additives and modifiers included in them to increase performance in their intended applications. Good performance can only be achieved from paraffinic based oils with a viscosity below 32 centistokes measured at 40°C (100°F). Oils of a higher viscosity resist flow and can damage mechanical seal faces.

Chesterton produces oil-based buffer and barrier fluids specifically designed for use with mechanical seals.
Specialty Barrier Fluids

Chesterton’s unique family of seal barrier fluids are designed to cool, lubricate, and clean seal components. Ultra-clean and low, thin film function reduces seal face wear and extends seal life.

662 FG and 610 Plus have excellent thermal stability to inhibit residue formation in the seal and barrier fluid tank, tubing and piping. 662 FG and 610 Plus can be used in pressured and non-pressurized barrier fluid systems per Plan S2, S3A, S3B, S3C or S4.

662 FG

Barrier Fluid 22

662 FG provides very stable seal performance over an extremely wide temperature range, satisfying most seal service requirements. 662 FG is extremely clean and has excellent low temperature fluidity and heat transfer properties.

Product Characteristics
- Viscosity @ 100˚C, 4.3 cSt
- Extremely low particle count designed to minimize face wear and extend seal life
- ISO 4406 particle count 12/11/9
- NSF H1 registered, incidental food contact
- FDA: Conforms to FDA 21 CFR 178.3620 a & b, 178.3570
- Good thermal stability
- Compatible with most fluids (mineral oil, PAO, and diester: not miscible with glycols or silicones)

Typical Physical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>662 FG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viscosity Grade</td>
<td>ISO VG 22</td>
</tr>
<tr>
<td>Temperature Range</td>
<td>25˚C to 120˚C (77˚F to 250˚F)</td>
</tr>
<tr>
<td>Flash Point (ASTM D 92)</td>
<td>171˚C (340˚F)</td>
</tr>
<tr>
<td>Thermal Conductivity 10˚C</td>
<td>0.126 to 0.102</td>
</tr>
<tr>
<td>50˚F to 500˚F (BTU/h-ft-F)</td>
<td>0.073 to 0.059</td>
</tr>
</tbody>
</table>

Recommended Applications
- Mechanical seal barrier fluid
- For high temperatures above 120˚C (250˚F) use 610 Plus Synthetic Fluid

Container Size | Item Number
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>20 Liter</td>
<td>081088</td>
</tr>
<tr>
<td>208 Liter</td>
<td>081089</td>
</tr>
</tbody>
</table>

610 Plus

Synthetic Lubricating Fluid

610 Plus is recommended for use at elevated temperatures where nitrogen purge is not an option and when FDA purity is not required.

610 Plus is a pure, synthetic ester that provides superior lubrication and cooling for double and tandem mechanical seals.

610 Plus provides very stable seal performance over an extremely wide temperature range, satisfying most seal service requirements. 610 Plus is extremely clean and has excellent low temperature fluidity and heat transfer properties.

Product Characteristics
- Viscosity @ 100˚C, 12 cSt @ 150˚C, 5 cSt
- Good flowability for low temperature applications to -25˚C (-15˚F)
- Non-carbonizing
- Low evaporation rate
- Great thermal stability
- Self cleaning, removes residues
- Corrosion protection

Typical Physical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>ISO VG 68</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature Range</td>
<td>25˚C to 270˚C (-15˚F to 520˚F)</td>
</tr>
<tr>
<td>Flash Point, C.O.C. (ASTM D 92, ISO 2592)</td>
<td>310˚C (590˚F)</td>
</tr>
<tr>
<td>Thermal Conductivity 10˚C</td>
<td>0.135 to 0.116</td>
</tr>
<tr>
<td>50˚F to 500˚F (BTU/h-ft-F)</td>
<td>0.078 to 0.067</td>
</tr>
</tbody>
</table>

Recommended Applications
- Barrier fluid operating to 240˚C
- Mist oil lubrication for pump and equipment bearings.
- Bearing housing lubricant for ANSI, API, CPI pumps and equipment

Container Size | Item Number
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Gallon/3.8 Liter</td>
<td>084296</td>
</tr>
<tr>
<td>20 Liter</td>
<td>084297</td>
</tr>
<tr>
<td>208 Liter</td>
<td>084295</td>
</tr>
</tbody>
</table>
SpiralTrac™
Standard Plan 33H/33S

When used with Chesterton mechanical seals, SpiralTrac™ Environmental Controllers greatly enhance seal reliability by effective removal of solids and improved cooling of the stuffing box.

Air: Vented from cavity when pump is stationary (eliminates crystallization, coking, overheating due to air)
Circulation: Driven around seal (excellent face cooling)
Exchange: In and out of cavity (heat removed from cavity)
Particulate: Immediately removed from cavity through the exit groove, flush or no flush

Technical Data

- Operating Parameters:
  - Version F (Split) Greatly Reduce Flush
  - Version N Reduced/No Flush in Non-Fibrous Fluids
  - Version D Reduced/No Flush in Fibrous Fluids
  - Version P Use Packing Only
  - Version C Reduced/No Flush With Bottom Drain

- Arrangements:
  - Type A Counter Bore Fit
  - Type B Bore Fit
  - Type S Axial Split
  - Type I Impeller Side Installation
  - Type E Externally Keyed

- Materials of Construction:
  - On Demand 316 Stainless Steel / EN 1.4401
  - Type A, B, S, and E 316 Stainless Steel
  - Type A, B, S, and E PTFE - Glass Filled
  - Type A, B, S, L, and E PTFE - Carbon Graphite-Filled
  - Type A, B, S, and E Bronze
  - Type A, B, S, and E AWC800—Red Polymer
  - Monel® 400/EN 2.4360

For operation outside the limits and additional materials consult Chesterton Mechanical Seal Engineering.
**Environmental Control Plans**

**PIPING PLAN 52**
- Clean flush with Flow Guardian™ SP50

**PIPING PLAN 32**
- SpiralTrac™ Version D Type I

**PIPING PLAN 54**
- Circulation with External Buffer Fluid Tank

**PIPING PLAN 33A**
- Circulation with Pressurized External Barrier Fluid Tank

**PIPING PLAN 53P**
- Circulation with Pressurized External Barrier Fluid Tank - Automatic Water Fill

**PIPING PLAN 53S**
- SpiralTrac™ Version F Type S and Flow Guardian™ SP50

**PIPING PLAN 55**
- Circulation with Unpressurized External System

---

**Seal Tank System Configurator**

**Type Code – Example**

<table>
<thead>
<tr>
<th>Type Code</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>PSS - XX - XY - BH - CMS - HW - LS - PS</td>
<td>...</td>
</tr>
</tbody>
</table>

**Type Code – Explanation**

<table>
<thead>
<tr>
<th>PSS</th>
<th>Tank Type</th>
<th>XX</th>
<th>Tank Option</th>
<th>XY</th>
<th>Tank Stand Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>WSS</td>
<td>Water Saving System</td>
<td>In-Line Water Filter Assembly c/w Isolation Valves</td>
<td>XX</td>
<td>Telescopic Vertically and Horizontally Adjustable</td>
<td></td>
</tr>
<tr>
<td>BSS</td>
<td>Buffer Support System</td>
<td>No Option Required</td>
<td>No Option Required</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BSSC</td>
<td>Buffer Support System with Cooling Coil</td>
<td>No Option Required</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSS</td>
<td>Pressurized Support System</td>
<td>No Option Required</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PSSC</td>
<td>Pressurized Support System with Cooling Coil</td>
<td>No Option Required</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BH</th>
<th>Piping Kit Option</th>
<th>CMS</th>
<th>Seal Connector Kit Option</th>
<th>HW</th>
<th>Refill Pump Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>BH</td>
<td>Stainless Steel Braided Hose Kit 1 x 42” and 1 x 48” with Fittings</td>
<td>CSS</td>
<td>Seal Connector Kit 2 x NPT 1/4” S - Straight Push-in Connectors - Brass</td>
<td>HO</td>
<td>Hand Pump Assembly for Oil-Based Fluid</td>
</tr>
<tr>
<td>FT</td>
<td>Finned Tube Kit 1 x 24” with Fittings</td>
<td>CSA</td>
<td>Seal Connector Kit 2 x NPT 1/4” A - Angled Swivel Joint Push-in Connectors - Brass</td>
<td>XX</td>
<td>No Option Required</td>
</tr>
<tr>
<td>XX</td>
<td>No Option Required</td>
<td>CMA</td>
<td>Seal Connector Kit 2 x NPT 3/8” S - Straight Push-in Connectors - Brass</td>
<td>XX</td>
<td>No Option Required</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LT</th>
<th>Instrumentation Option (Maximum 2 Selectable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LTI</td>
<td>High/Low Level Switch for Nonhazardous Area</td>
</tr>
<tr>
<td>LW</td>
<td>High/Low Level Switch, Intrinsically Safe</td>
</tr>
<tr>
<td>PS</td>
<td>High/Low Pressure Switch for Nonhazardous Area 1:20 bar (15-300 psi)</td>
</tr>
<tr>
<td>PU</td>
<td>High/Low Pressure Switch, Intrinsically Safe</td>
</tr>
<tr>
<td>XX</td>
<td>No Option Required</td>
</tr>
</tbody>
</table>

1 Only Compatible with WSS
2 Only Compatible with BSS/C and PSS/C
Global Solutions, Local Service

Since its founding in 1884, the A.W. Chesterton Company has successfully met the critical needs of its diverse customer base. Today, as always, customers count on Chesterton solutions to increase equipment reliability, optimize energy consumption, and provide local technical support and service wherever they are in the world.

Chesterton’s global capabilities include:

- Servicing plants in over 100 countries
- Global manufacturing operations
- More than 500 Service Centers and Sales Offices worldwide
- Over 1200 trained local Service Specialists and Technicians

Visit our website at www.chesterton.com