

## Optimal Conditions for Use of PallSeitzSchenk® Filter Sheets in Beer Filtration

### ***Flow Rate and Differential Pressure:***

#### **20x20 cm Sheet:**

	<b>Optimum bbl/hr/sheet</b>	<b>Maximum bbl/hr/sheet</b>	<b>Maximum Differential Pressure</b>
Sterilizing Filtration	0.14	0.20	27 psi (1.8 bar)
Polishing Filtration	0.40	0.50	37 psi (2.5 bar)

- Effective filter area 0.77 sq. ft. (0.070 meter sq.)

#### **40x40 cm Sheet:**

	<b>Optimum bbl/hr/sheet</b>	<b>Maximum bbl/hr/sheet</b>	<b>Maximum Differential Pressure</b>
Sterilizing Filtration	0.20	0.33	27 psi (1.8 bar)
Polishing Filtration	0.60	0.75	37 psi (2.5 bar)

- Effective filter area 1.54 sq. ft. (0.143 meter sq.)

#### **60x60 cm Sheet:**

	<b>Optimum bbl/hr/sheet</b>	<b>Maximum bbl/hr/sheet</b>	<b>Maximum Differential Pressure</b>
Sterilizing Filtration	0.50	0.75	27 psi (1.8 bar)
Polishing Filtration	1.40	1.75	37 psi (2.5 bar)

- Effective filter area 3.58 sq. ft. (0.330 meter sq.)

**Sterilizing Filtrations:** Throughput range 5 to 30 times maximum recommended flow rate with good prefiltration.

**Polishing Filtrations:** Normal for well-settled ales:

- 20x20 – 0.45 bbl/sheet
- 40x40 – 0.67 bbl/sheet
- 60x60 – 1.50 bbl/sheet

For Lager beers, expect a throughput volume/filter sheet of 2-3 times greater

### ***Rinsing and Sterilization:***

Unsterilized sheets should be rinsed with water or recirculated with product for a minimum of 10 minutes prior to use.

- Hot Water Sterilization: 20 minutes at a minimum 180°F
- Steam Sterilization (Stainless Steel Plates ONLY): 20 minutes at a maximum pressure of 7 psi and a maximum temperature of 230°F. Do not expose filter plates to heat in fully tightened condition. Retighten filter after cooling
- Chemical sterilants are unreliable.
- Chlorinated or caustic chemicals may damage structure.
- Surfactants such as Quaternary Ammonium or Lodofor are difficult to rinse from the sheet matrix.
- Suggested Compatible Sanitizers:
  - Sulfur Dioxide @ 1000ppm
  - 5% Citric Acid Solution
  - Phosphoric Acid Solution 0.1-0.2%, pH 2.2

### ***Important Factors for Good Sheet Filtrations:***

- Maintain consistent conditions of flow and pressure throughout filtration.
- Use only proper grades suggested for specific purposes. **Do not** mix grades within a single filtration without a diversion chamber.
- If regeneration is attempted, use only clean water below 120°F in reverse direction of flow. Regeneration is most effective if done right before high differential pressure is reached; i.e. below 15-20 psi (1.0-1.5 bar). Recirculate product after regeneration in critical applications.
- Assure sheets are properly oriented in filter with rough filter sheet surface facing the inlet plates and the smooth side marked with grade and logo facing the outlet plates.
- If excess edge leakage occurs (more than 3-5 gallons per 8 hr shift), check condition of filter for proper gaskets, good lubrication, or warped plates.
- Prevent release of gas from solutions inside of filter by maintaining appropriate back pressure: 10-15psi above product equilibrium pressure. Keep filter well vented through use of the outlet at the highest available point and bleeding of vent valves.
- Proper prefining, treatment with enzymes, gelatin, isinglass or prefiltrations with diatomaceous earth, will usually lead to greater economy and reliability of sheet filtrations.
- Beers should not be premembraned filtered with sheets more than 24 hours before the membrane filtration. With heavy beer styles, sheet filtration may be necessary immediately prior to membrane filtration.
- Consult Scott Laboratories, Inc. representative for suggestions or trial filtration apparatus.