



Life Sciences

USD2970a

# Stax™ Disposable Depth Filters

Ideal for facilitating high solid-load content

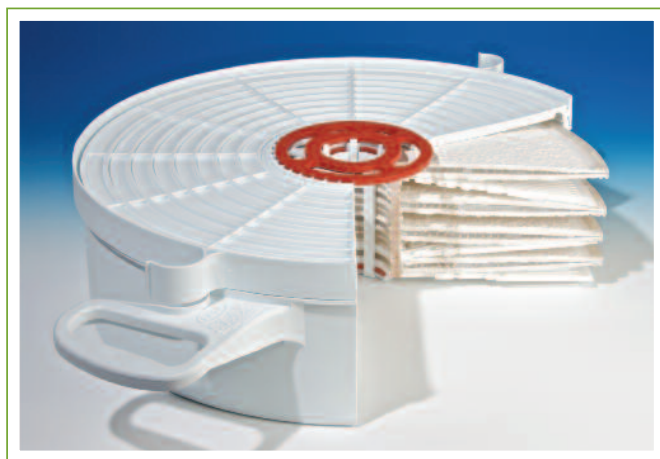


*Filtration. Separation. Solution.<sup>SM</sup>*

# The Most Versatile Disposable Depth Filter Platform

Stax capsules are ideally suited to accommodate high-solid-load contents, often occurring in various process steps in the blood plasma fractionation process, or the API industry. The addition of filter aids and/or loose activated carbon powder often facilitates filtration of difficult-to-handle products. However, removal of filter aids/carbon powder can be somewhat challenging. In the past, the way forward was to use filter presses equipped with individual filter sheets. Discharge of filter sheets (often completely loaded) can be a difficult process, as disposal is a dirty, labor-intensive process, not suited for a GMP environment. In cases where filter cakes are contaminated, operators must be protected by wearing protective clothing in order to avoid any risk of exposure.

Using Pall's well-established Stax technology, removal of filter aids can be handled in a convenient way, as the entire system is encapsulated. After the filtration step, the removed filter aid/carbon powder is stored within the capsules, and can be easily disposed of. The Stax system enables a safe, clean way to deal with challenging process steps and streamline your process filtration applications. Stax disposable depth filter capsules increase process efficiencies and address the need for simplicity, safety, speed, and intuitive operation.



## Simple, Intuitive Operation

Placed into one of three different sized chassis, Pall's single use Stax capsules eliminate the use of stainless steel housings or filter presses which require costly cleaning and cleaning validation. Stax system chassis are designed for assembly and use by a single operator and provide a logically conceived disposable platform in which the operator can load, operate and unload in an ergonomically designed vertical orientation.

With simple, straight forward and familiar features, the Stax platform eliminates the risk of error or mishap and enables greater process success. Single-use system will further maximize the overall benefits of implementing a single-use strategy and the Stax platform.

## Complete Flexibility in Process Design

The Stax platform has been designed to accommodate nearly all processing options. Whether you want to process:

- ▶ Bottom in/bottom out
- ▶ In series

Simply using Pall's uniquely designed manifold kits provides complete flexibility in your process design.

The Pall Stax capsules are available in a wide array of advanced pharmaceutical-grade Seitz depth filter media. Supported through comprehensive validation guides, Seitz depth filter media meets the highest pharmaceutical standards for:

- ▶ Quality
- ▶ Lot-to-lot consistency
- ▶ Manufacturing control
- ▶ Low extractable content
- ▶ Low endotoxin content

## Features and Benefits of Stax Systems

| Features              | Benefits  |
|-----------------------|---|
| Low hold-up volume    | Greater product recovery and lower post use rinse volume requirements than traditional systems. Post use blow down in forward flow direction is possible. |
| No housings           | Easier to use and manipulate while eliminating operator safety issues.  |
| Completely disposable | Eliminates need for cleaning and cleaning validation.   |
| Encapsulated design   | Reduces operator exposure to potential hazards.   |
| Intuitive operation   | Reduces operator training and increases time to acceptance.   |
| Small footprint       | Enables use in close proximity to other equipment and reduces cost to install.  |



Stax capsules with increased spacing are supplied in three different configurations to accommodate variable amounts of solid loads. The following table provides an indication of the available volumes. The volumes are given in liters. In order to calculate the cake quantity in kg, the wet density of the cake must be multiplied with the available volume.

**Table 1**

*Available Volumes (Nominal)*

| Configuration for Stax Capsule | Filter area (m <sup>2</sup> ) | Available Volume (L) |
|--------------------------------|-------------------------------|----------------------|
| 402                            | 0.5                           | 13.2                 |
| 404                            | 1.0                           | 9.9                  |
| 406                            | 1.5                           | 6.8                  |

Stax capsules enable a very equal cake distribution over the entire system. Figure 1 shows the full capacity of a Stax capsule with two filter cells using Celite S as DE filling material and a bottom-in, bottom-out configuration. 41.433 g of dry Celite S was suspended in water resulting in a volume of 132.377 liters.



# Technical Information

**Figure 1**

*Cake distribution with a two cell capsule*

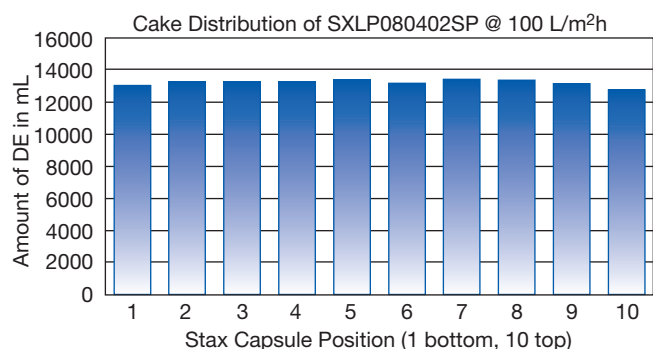
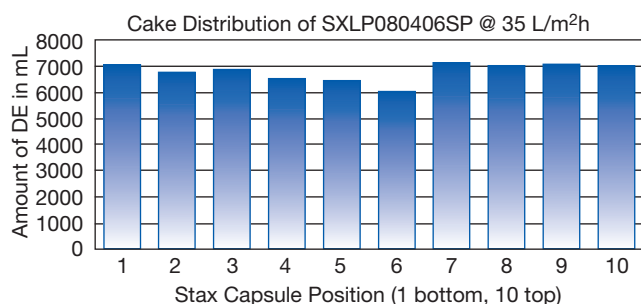


Figure 2 shows the full capacity of a Stax capsule with six filter cells using Celite S as DE filling material and a bottom-in, bottom-out configuration. 20.000 g of dry Celite S was suspended in water resulting in a volume of 67.936 liters.

**Figure 2**

*Cake distribution with a six cell capsule*



**Table 2**

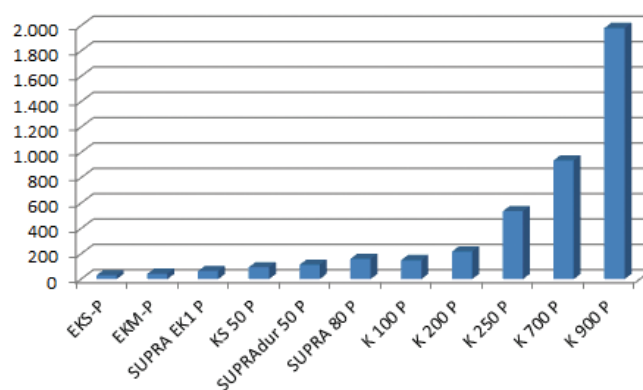
*Nominal Dimensions and Weight*

| Capsule size | Capsule Footprint    |                       | Weight (Dry) |
|--------------|----------------------|-----------------------|--------------|
|              | Diameter             | Height                |              |
| Large        | 442 mm<br>(17.4 in.) | 128.8 mm<br>(5.1 in.) | 4.5 – 6.5 kg |

## Seitz P-series Depth Filter Media

Seitz P-series depth filter sheets were specifically developed for the strict requirements in biotechnological and pharmaceutical industries. Manufactured with stringent in-process control methods assures consistent filtration quality, a very high purity of filter medium, and alignment with the requirements of the pharmaceutical industry. For further information, please reference validation guide USTR 2366.

*Typical Permeability (L/m<sup>2</sup>/min at 1 bar)*



## Specifications

**Table 3**

### Materials of Construction

|                |                            |
|----------------|----------------------------|
| Media          | Cellulose base             |
| Capsule shell  | Glass filled polypropylene |
| Filter element | Polypropylene              |
| Gaskets        | Silicone                   |

For further information regarding extractables data and certifications for the capsules shells and manifolds please reference the Stax platform validation guide USTR 2528. For extractable data and certification for the P-Series media, please reference USTR 2366.

**Table 4**

### Operating Parameters<sup>(1)</sup>

|                               |   |
|-------------------------------|---|
| Maximum operating temperature | 60 °C                                   |
| Maximum operating pressure    | 3.5 bar at 25 °C<br>1.0 bar at 60 °C    |
| Maximum differential pressure | 1.5 bar at 25 °C –<br>forward direction |

<sup>(1)</sup> Note: All pressure and temperature specifications are for Stax capsules correctly installed into Pall Stax chassis.

**Table 5**

### Sanitization

|                            |   |
|----------------------------|---|
| Post use caustic treatment | 1 M NaOH at 3.5 bar for 1 h<br>at 25 °C |
|----------------------------|---|

**Table 6**

### Traceability

|  |   |
|--|---|
| Capsule part number<br>laser engraved with | <ul style="list-style-type: none"> <li>• Media batch number</li> <li>• Internal sales order number</li> <li>• Unique serial number</li> </ul> |
|--|---|

## Pre Release Testing

All capsules 100% leak tested.



## Chassis Information

**Table 7**

### Chassis Dimensions

| Chassis Model | Footprint Size        |                       |                      |
|---------------|-----------------------|-----------------------|----------------------|
|               | Height                | Length                | Width                |
| SXLSC02       | 1018 mm<br>(40.0 in.) | 516 mm<br>(20.3 in.)  | 516 mm<br>(20.3 in.) |
| SXLSC02W      | 1059 mm<br>(41.7 in.) | 591 mm<br>(23.2 in.)  | 560 mm<br>(22.0 in.) |
| SXPSC05P      | 1241 mm<br>(48.9 in.) | 610 mm<br>(24.0 in.)  | 610 mm<br>(24.0 in.) |
| SXPSC05W      | 1312 mm<br>(51.6 in.) | 1150 mm<br>(45.3 in.) | 800 mm<br>(31.5 in.) |
| SXPSC10P      | 1864 mm<br>(73.4 in.) | 610 mm<br>(24.0 in.)  | 610 mm<br>(24.0 in.) |
| SXPSC10W      | 1935 mm<br>(76.2 in.) | 1150 mm<br>(45.3 in.) | 800 mm<br>(31.5 in.) |

**Table 8**

### Chassis Weights and Capsule Capacity

| Chassis Model | Weight | Number of Stax Capsules |         |
|---------------|--------|-------------------------|---------|
|               |        | Minimum                 | Maximum |
| SXLSC02       | 75 Kg  | 1                       | 2       |
| SXLSC02W      | 75 Kg  | 1                       | 2       |
| SXPSC05P      | 190 Kg | 1                       | 5       |
| SXPSC05W      | 192 Kg | 1                       | 5       |
| SXPSC10P      | 238 Kg | 1                       | 10      |
| SXPSC10W      | 240 Kg | 1                       | 10      |

**Table 9**

### Chassis Materials of Construction

304/1.4301 Stainless Steel 1.2 µm / 64 µin Ra (typical) Electro-polish

## Design Basis

- ▶ Conforms to Pressure Equipment Directive – Category 1 / Module A (SXLSC02 is Sound Engineering Practice)
- ▶ Outside scope of ASME VIII Div 1 Complies with Universal Building Code (1997) – Zone 4 / Importance factor 1.25 (SXPSC\*P ONLY)

\* Place holder for either 05 (indicating a 5 high process scale chassis) or 10 (indicating a 10 high process scale chassis) ATEX chassis available upon request

# Ordering Information

## Stax Chassis

| Part Number | Description                          | Part Number | Description                           |
|-------------|--------------------------------------|-------------|---------------------------------------|
| SXLSC02     | Pilot scale without castors          | SXPSC05W    | 5 high process scale with castors     |
| SXLSC02W    | Pilot scale with castors             | SXPSC10P    | 10 high process scale without castors |
| SXPSC05P    | 5 high process scale without castors | SXPSC10W    | 10 high process scale with castors    |

## Stax Manifold Kits

**Pall Part Number:** SX  400 SP

| Code | Description          | Code    | Description      |
|------|----------------------|---------|------------------|
| TBM  | Bottom in top out    | 1 ½ in. | 1 ½ in. manifold |
| BBM  | Bottom in bottom out | 2 in.   | 2 in. manifold   |

**Example Part Number:**  
SXTBM400SP1½in

## Stax Capsule Single Layer

**Pall Part Number:** SX   4  SP

| Code | Nominal Height    | Code | Media Grade   | Code | Description    |
|------|-------------------|------|---------------|------|----------------|
| L    | 128.8 mm (5.1 in) | PEKS | EKS-P         | 02   | 2 filter cells |
|      |                   | PEKM | EKM-P         | 04   | 4 filter cells |
|      |                   | PEK1 | SUPRA EK1 P   | 06   | 6 filter cells |
|      |                   | P050 | KS 50 P       |      |                |
|      |                   | P080 | SUPRA 80 P    |      |                |
|      |                   | P100 | K 100 P       |      |                |
|      |                   | P200 | K 200 P       |      |                |
|      |                   | P250 | K 250 P       |      |                |
|      |                   | P700 | K 700 P       |      |                |
|      |                   | P900 | K 900 P       |      |                |
|      |                   | D50P | SUPRAdur 50 P |      |                |

**Example Part Number:**  
SXLP100402SP



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