



Superflo® Production Column

Depend on Sepragen for your Production needs



Sepragen pioneered the development and use of Radial Flow columns for process chromatography and holds a number of patents on the basic technology. More important, the expertise available by applying this technology to large-scale separation processes throughout the BioPharmaceutical, Food, Plasma, Gene Therapy and Environmental industries. It's easy to take advantage of this expertise by contact one of our industrial separations experts to discuss your application.

Superflo® Columns are based on unique radial flow geometry and are ideally suited for high throughput preparative and bioprocess applications. They are versatile, easy to use and offer a number of advantages over conventional columns, especially when it's time to scale-up.

Hundreds of Radial Flow Columns are used routinely in laboratories around the world in process development and clinical production. Over 20 FDA approved drugs, amongst them immunoglobulins and clotting factors from human plasma, vaccines interferons, and several recombinant drugs are manufactured on Superflo® Columns. In one instance, 20,000 liters of human plasma is processed every batch to yield ~20 Kg protein/batch.

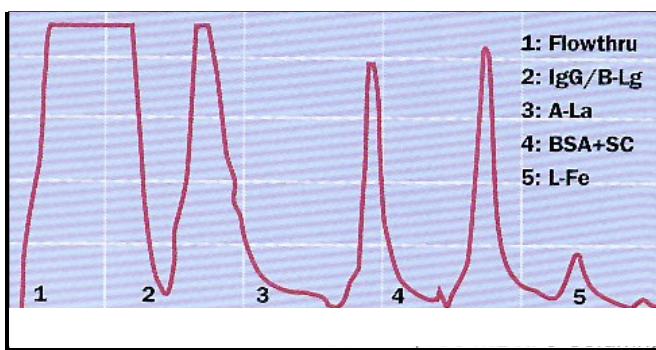
The Columns are not just used to manufacture biomolecules but are also being used routinely in the Dairy, Nutraceutical and Environmental industries to process large volumes of whey, Certain molecules like antioxidants from Fruit juices and heavy metals from waste streams.

- ✓ Low Back Pressure
- ✓ 4 – 10X High Flow Rates
- ✓ True Linear Scale-up
- ✓ Easy Validated Packing method
- ✓ Moveable by Column Mover (Caster & Leveler)
- ✓ Reinforced 8mesh frit for 4 Bar rating (10 - 20µm)
- ✓ Turck RFID Label
- ✓ Removable Distributor for cleaning
- ✓ USP Grade VI, ADI Free Seals
- ✓ Sanitary Design

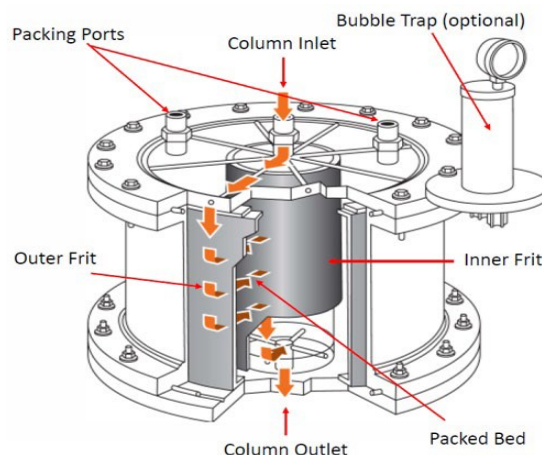


4 Radial Flow Lactoferrin Column Commercial Installation

- Typical Size of installation to process 300KL/ Day skim to - Produce 30+ tons of LF Annual Capacity
- Process Involves running skim/conc whey through these columns packed with Charged Resin to bind target protein
- Bound protein is stripped from resin with salt and pH
- Protein is diafiltered, concentrated and dried.



Scale-up on radial flow columns resulted in 1/3 column size, 1/3 processing time and 1/3 media cost.



How it works:

Superflo® columns are based on radial flow chromatography. The columns have three annular channels. The outer and inner channels have equal cross-sectional areas and conduct the fluid flow to the outlet. The middle channel contains the chromatographic packing. Due to the large cross-sectional area of the outer channels and the low bed depth, Superflo® columns allow extremely high flow rates with very little pressure drop.

The sample is introduced at the sample inlet from which it is distributed evenly throughout the center channel. From this outer channel, the sample flows through a porous tube and into the packing material where the sample constituents are selectively bound. After an elution procedure, the sample components pass sequentially through the inner porous tube of the column and out the column outlet.

This unique radial flow design makes the column suitable for high throughput separations such as ion exchange, affinity, hydrophobic, reverse phase and other forms of adsorption-desorption separations. The columns are, however, not recommended for bed depth dependent isocratic separations,



Standards and Specifications

A. Operating Dimensions of Resin Bed

Radius of Inner Filter: 11.94" (30.33 cm)
Radius of Outer Filter: 17.92" (45.52 cm)
Ratio of Outer Filter to Inner Filter: 1.53
Bed Depth: 6" (15 cm)
Distance between Bottom of
Inlet Head and Top of Outlet Head: 36.70" (93.2 cm)
Inlet Head removeable from Distributor
Bed Volume: 150 - 500L
Can be customized as per needs

B. Overall Dimensions of Column and Weight:

Channel Footprint 40.5" X 39.8" (101.10 cm) X
Height 78.9" (200.5 cm)
Column Top Nozzle to Bottom Nozzle: 38.8" (98.6 cm)
Assembled Weight: Approximately 2,202 lb. (1045 kg)
Packed Weight: Approximately 3,148 lb. (1,428 kg)
Note: Height varies depending on volume of column

C. Nozzles, Valves and Manifolds

Nozzle Diameter: 1-1/2" (3.8 cm)
Nozzle Type: Tri-clamp/Dockweiler
Packing Manifold: 4-Port
Port Plugs: Yes
Valves: 4 Packing Valves & 2 Inlet/Outlet
Diaphragm Valves

D. Operating Specifications

Pressure Rating: 4 Bar
Temperature: - 4° C to 134° C
Design: ASME / CE PED 2014/98/EU
Fluids Class: Non Hazardous Group 2
Certification: ASME / CE PED 2014/98/EU

E. Surface Finish

Product Contact: 15 Ra (0.4 µm) Optional
0.25 µm
External: 30 Ra (0.8 µm)
Passivation: Yes
Electro-polish: Yes

F. Inner & Outer Frit

Pore Size: 10 - 20 microns
Number of Meshes: 8

G. Materials of Construction:

316L Stainless Steel
Elastomers: White Silicone USP Class VI and
ADI Free

H. Column Support:

304 SS Frame + Leveling Feet

I. Lifting Device:

Enables easy removal of column head, frits,
collector rod or body

J. Cleaning Wand/Nozzle: Enables multi-
directional spray for easy cleaning of column in
situ unpacking

K. Column can be moved by Column Mover

L. Turck RFID ensures inventory (electronic)
tagging

Whey Protein Manufacturing using Superflo Industrial Scale Columns



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