

# PLANNOVA™ S20N

Next Generation Superior Cellulose Membrane



Assurance Beyond Expectation™





## Next Generation Superior Cellulose Membrane

Planova™ is the world's first virus removal filter launched in 1989. With its start in the plasma industry, Planova emerged to become a major technological breakthrough for ensuring virus safety for many biologicals. To meet new challenges, Asahi Kasei Bioprocess has developed the newest superior regenerated cellulose Planova S20N that combines high flux and broad adaptability across platforms.

We endeavor to contribute to the further improvement of operations and the greater safety of biotherapeutic products through our latest addition—Planova S20N.



### Key Features of Planova S20N

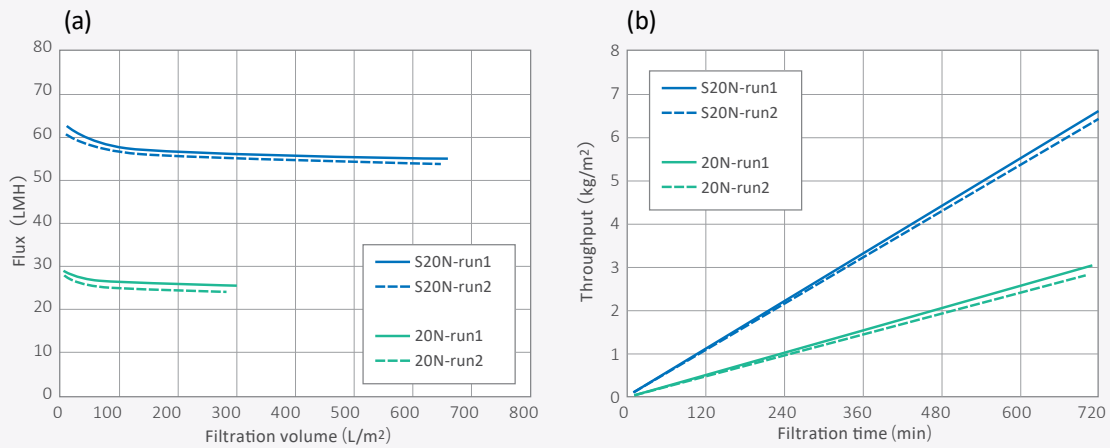
-  Processing More, Faster—  
Superior Regenerated Cellulose Membrane Withstands Higher Pressure
-  Robust Virus Removal Capability
-  Excellent Scalability and High Lot-to-Lot Consistency
-  Improved Operational Efficiency

# Processing More, Faster—

## Superior Regenerated Cellulose Withstands Higher Pressure

The superior regenerated cellulose membrane of Planova S20N withstands higher filtration pressure and resists clogging to deliver stable filterability with higher flux and throughput.

Higher Flux + Higher Throughput

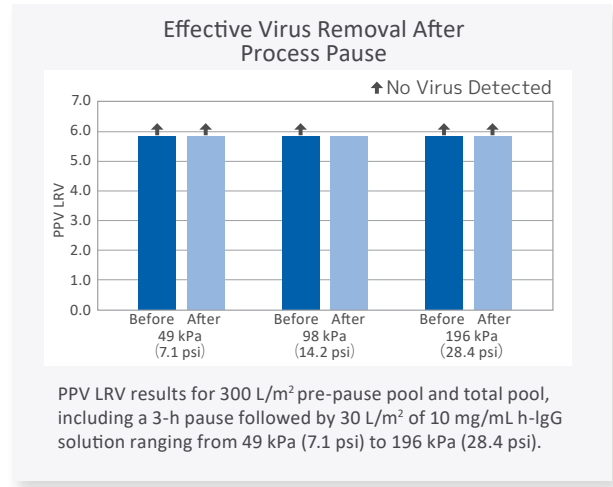
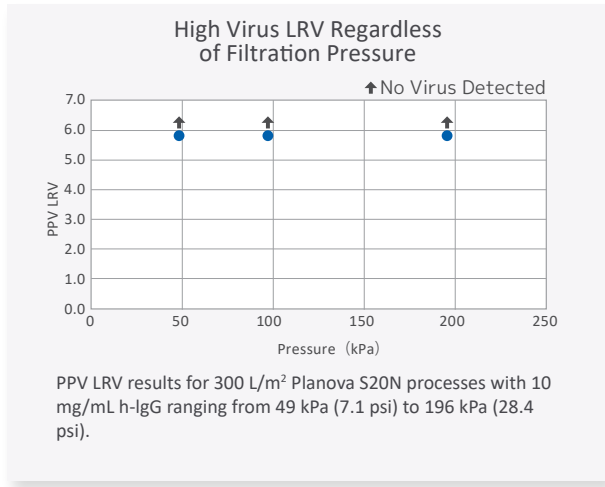


Comparison of filtration performance (a) flux and (b) protein throughput of Planova S20N and Planova 20N filters for 10 mg/mL h-IgG, pH 4.0, 0.5 mS/cm. Filtration pressure was 196 kPa (28.4 psi) for Planova S20N and 98 kPa (14.2 psi) for Planova 20N.



# Robust Virus Removal Capability

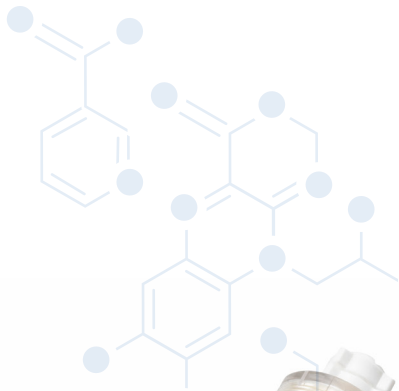
Planova S20N shows high virus LRV with various viruses and process designs



### Virus Safety Demonstrated for Various Viruses

Virus	Size (nm)	Total pool LRV after 30-min process pause
MVM	18 - 24	≥5.3
PPV	18 - 24	≥5.8
EMCV	25 - 30	≥5.9
BVDV	50 - 70	≥5.9
HIV	80 - 120	≥4.1
PRV	120 - 200	≥5.4

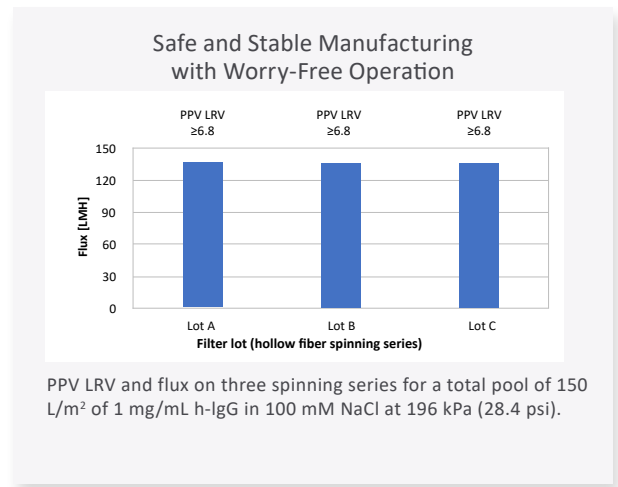
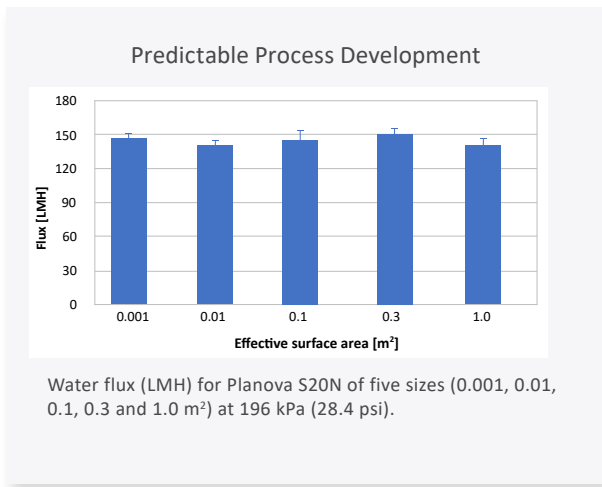
Virus LRV results for the total pool of 165 L/m<sup>2</sup>, including a 30-min pause followed by 15 L/m<sup>2</sup> for Planova S20N processes with 1 mg/mL h-IgG in 100 mM NaCl at 196 kPa (28.4 psi).



# Excellent Scalability and High Lot-to-Lot Consistency

Planova S20N shows

- » Consistent water flux across filter sizes
- » Stable flux and virus removal across different lots



## Improved Operational Efficiency

- » Just like other Planova filters, Planova S20N arrives at your site “ready to use” – no pre-wetting or sterilization is required prior to use in filtration
- » Building on this momentum, the post-use integrity test is simple – only a leakage test
- » Planova S20N will contribute to operational efficiency during process scale-up and manufacturing

### Sequence of Planova S20N Operation



\*GPT (Gold Particle Test):  
The GPT (gold particle test) is a pore size distribution test conducted on post-use Planova 15N, 20N and 35N filters.

## Specifications & Suggested Operating Parameters

		Effective Surface Area (m <sup>2</sup> )				
		1.0	0.3	0.1	0.01	0.001
Component	Hollow fiber membrane	Cuprammonium regenerated cellulose				
	Housing and headers	Polycarbonate				
	Sealant	Polyurethane				
	O-rings	Silicone				
	Balloon caps	Silicone		-*1		
	Nozzle plugs	Silicone		-		
	Nozzle stoppers	Silicone		-		
	Gaskets*2	Silicone		-		
	Ferrule caps	Polycarbonate		-		
	Balloon cap holders	Polycarbonate		-		
	Threaded clamps	Clamp bolts	Polypropylene		-	
		Clamp nuts	Polypropylene		-	
	Luer lock plugs	-		Polypropylene		
Nozzle caps	-		Silicone			
Supplied As	Filled with purified water					
Sterilization Method	Autoclaving					
Packaging Format	Packed individually in sterilization bags					
Operating Pressure (TMP)	≤216 kPa (31.3 psi)					
Operating pH	3 – 9					
Biological Safety	Conformance with USP standards for class VI plastics					

\*1 Not applicable

\*2 Gaskets are used for connecting quick clamps to nozzles of Planova S20N filters with effective surface areas of 1.0, 0.3 and 0.1 m<sup>2</sup>.

## Product Lineup & Catalog Numbers

Planova S20N	Effective Surface Area (m <sup>2</sup> )	Catalog No.
	1.0	S20-LF10
	0.3	S20-3000
	0.1	S20-1000
	0.01	S20-0100
	0.001	S20-0010

## Contact Information



Visit us on the web at  
[planova.ak-bio.com](http://planova.ak-bio.com)

### North and South America

Glenview, IL, USA  
Tel: +1-847-556-9700  
Fax: +1-847-556-9701

### Europe and Middle East

Brussels, Belgium  
Tel: +32-2-526-0500  
Fax: +32-2-526-0510

Cologne, Germany  
Tel: +49-221-995007-0  
Fax: +49-221-9950077-10

### Asia and Oceania

Tokyo, Japan  
Tel: +81-3-6699-3782  
Fax: +81-3-6699-3784

Mumbai, India  
Tel: +91-22-6710-3962  
Fax: +91-22-6710-3979

Shanghai, China  
Tel: +86-21-6391-6111 (250)  
Fax: +86-21-6391-6686