

MASTERFLEX®

I/P®

Masterflex® I/P® Cytoflow® Pump System

Ensure maximum
protection of live cells
and shear-sensitive fluids

- Convex-roller design is gentler on live cells and shear-sensitive fluids—validated by independent test data
- Low-speed pumping maintains consistency and characteristics of shear-sensitive fluids
- Ideal choice for biopharma and microbiology applications

When it comes to providing maximum protection to live cells and sensitive fluids not all peristaltic pumps are designed equally. The Masterflex Cytoflow pump head was specifically designed to minimize the impact on live cells and shear-sensitive fluids.

The I/P Cytoflow pump system with stainless steel process drive features MasterflexLive™—a secure cloud-enabled platform for real-time monitoring and control of pump status and performance. For full information, go to Masterflex.com/MasterflexLive.

With MasterflexLive®
Technology

MASTERFLEXLIVE®



1-800-637-3739

Masterflex.com

Masterflex® I/P® Cytoflow® Pump System with MasterflexLive™ Technology



- MasterflexLive offers real-time remote control and monitoring of all pump parameters
- Push notifications alert you to operating conditions and error messages, letting you adjust critical pump processes 24/7—no need to be onsite
- Operational data logging is compliant to 21 CFR Part 11 & EU Annex 11
- Graphical LCD on drive shows four operating modes: continuous run, timed dispense, copy dispense, volume dispense
- Open-head sensor stops the drive when the pump head is opened
- Reduced downtime with single-lever tube changes
- Brushless, maintenance-free motor



Masterflex I/P Cytoflow Pump (tubing not included)



What's included: stainless steel process drive, I/P Cytoflow pump head, and line cord with IEC 320/CEE22 socket. Shipped with country-specific plug/cord set; please specify ultimate destination when ordering.

Flow rates in LPM

rpm	Precision pump tubing			
	I/P 26	I/P 73	I/P 82	I/P 84
1 to 500	0.007 to 3.9	0.014 to 8.0	0.022 to 10.0	0.023 to 13.6

rpm	Speed control accuracy	Speed control (resolution)	Pump heads accepted	Motor size	Enclosure rating	Dimensions (L x W x H) (42.3 x 28.3 x 32.8 cm)	Power (50/60 Hz)		Catalog number
							VAC	Amps	
0.1 to 500	±0.1%	±0.25%	1	¾ hp (280 W)	IP66 (NEMA 4X), washdown	16¾" x 11⅛" x 12⅞"	90 to 260	4.5 at 115 VAC; 2.5 at 230 VAC	MK-77420-80

WARNING: This product can expose you to chemicals including BPA, lead, and phthalates, which are known to the State of California to cause cancer and reproductive harm. For more information, visit www.P65Warnings.ca.gov

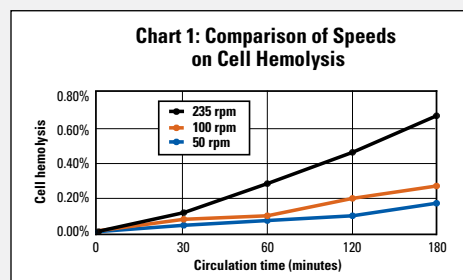
Cell Viability Test Data

Hemolysis of blood cells was used to evaluate the sensitivity of several pump designs for live cell circulation. In vitro testing was completed using citrated bovine blood circulated through several peristaltic pump systems and settings to establish optimal conditions. Each pump system was evaluated against its Average Hemolytic Index for 180 minutes.

Factors Affecting Shear Sensitivity

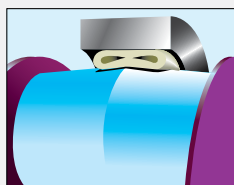
Pump Motor Speed

Flow rates in peristaltic pumps are dictated by the rotation speed of the motor, measured in revolutions per minute (rpm). Peristaltic pumps generally present linear flow rates versus rpm with the tubing diameter, number of rollers, and overall occlusion bed size affecting the amount of flow per revolution. Chart 1 shows that the motor speed is very dominant in a pump's ability to maintain cell viability during recirculation.

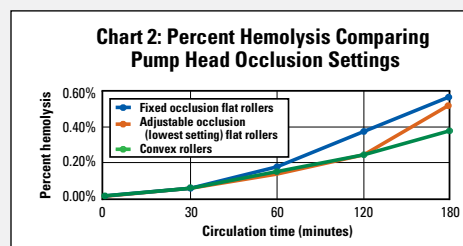


Pump Head Occlusion

Less tubing occlusion allowed space for the blood cells to shift around the force of the roller which decreased the overall percent of hemolysis. Chart 2 compares the effect of flat rollers versus convex rollers on pumps running at the same speed. In this case, equipping a pump head with less than full occlusion improves cell viability 10 to 25%.



Convex roller



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