High Shear Flow Rates

Vena8™ Glass Coverslip Cellix Biochips

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Vena8 Glass Coverslip Cellix Biochips — High Shear / Flow Rates

Sample	Vena8GCS — HIGH FLOW RATES						Pump Recommendations
	Shear Stress (dyne/cm^2)	Shear Rate (s^{-1})	Flow Rate (cm^3/s)	Flow Rate (µL/min)	Flow Rate (µL/h)	Vol (µL) for 3 min experiment	
Cell suspension	20	2,000	0.00171	102	6,144	307	ExiGo/Mirus; 20–40 dynes/cm^2
Cell suspension	25	2,500	0.00213	128	7,680	384	ExiGo/Mirus; 20–40 dynes/cm^2
Cell suspension	30	3,000	0.00256	154	9,216	461	ExiGo/Mirus; 20–40 dynes/cm^2
Cell suspension	35	3,500	0.00299	179	10,752	538	ExiGo/Mirus; 20–40 dynes/cm^2
Cell suspension	40	4,000	0.00341	205	12,288	614	ExiGo/Mirus; 20–40 dynes/cm^2
Whole blood	90	2,000	0.00171	102	6,144	307	ExiGo/Mirus; 90–180 dynes/cm^2
Whole blood	100	2,222	0.00190	114	6,827	341	ExiGo/Mirus; 90–180 dynes/cm^2
Whole blood	120	2,667	0.00228	137	8,192	410	ExiGo/Mirus; 90–180 dynes/cm^2
Whole blood	140	3,111	0.00265	159	9,557	478	ExiGo/Mirus; 90–180 dynes/cm^2
Whole blood	160	3,556	0.00303	182	10,923	546	ExiGo/Mirus; 90–180 dynes/cm^2
Whole blood	180	4,000	0.00341	205	12,288	614	ExiGo/Mirus; 90–180 dynes/cm^2

Specifications of Vena8 Glass Coverslip Biochips for High Shear / Flow Rates

	Vena8GCS — HIGH FLOW RATES
Channel width, b (cm)	0.08
Channel height, h (cm)	0.008
Channel length, l (cm)	2.8
Microcapillary/channel volume (cm^3)	0.00179
Microcapillary/channel volume (µL)	1.79

Flow rate: $Q = \tau bh^2/6\mu$	Viscosity of cell culture suspension, μ = 0.01 dynes/cm^2·s Viscosity of whole blood, μ = 0.045 dynes/cm^2·s
Shear Stress: $\tau = 6Q\mu/ bh^2$	Equivalent to: cm^3/s = 0.001 L/s = 0.06 L/min = 60 mL/min = 60000 µL/min