



High Shear Flow Rates

Vena8™ Glass Coverslip Cellix Biochips

Distributed in Europe by World Precision Instruments www.wpi-europe.com

UK Office +44 (0)1462 424700 wpiuk@wpi-europe.com

German Office +49 (0)6031 67708-0 wpide@wpi-europe.com

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

Distributed in Europe by World Precision Instruments www.wpi-europe.com
UK Office +44 (0)1462 424700 wpiuk@wpi-europe.com
German Office +49 (0)6031 67708-0 wpide@wpi-europe.com

