

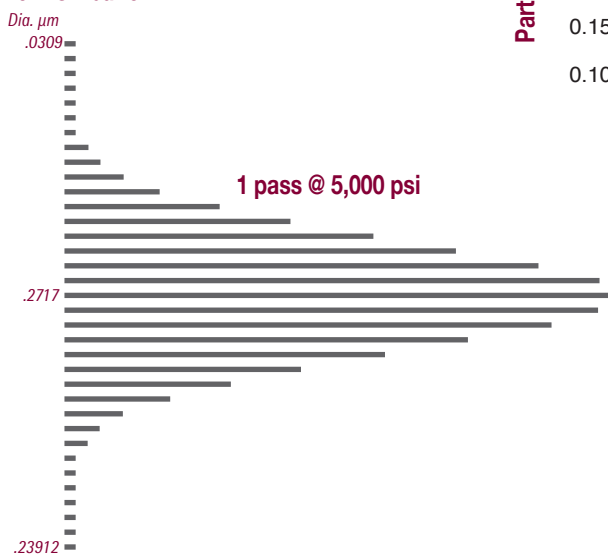
Materials Processing Data Sheet

Microfluidizer® Processor Laboratory Results

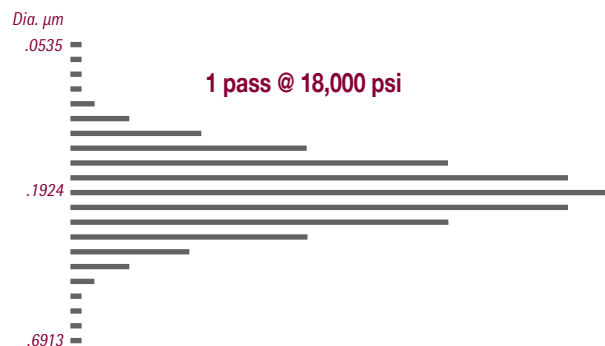
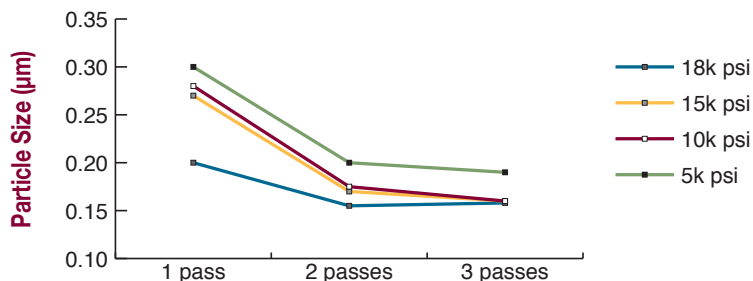
Industry: Chemical
 Product: Fatty acid ester emulsion for mold release
 Test Objective: Achieve D_{50} 0.37 μm , D_{99} 0.83 μm in one pass
 Processor: M-110Y
 Chambers: Interaction Chamber (upstream) F20Y
 Auxiliary Processing Module (downstream) H30Z
 Number of passes: 1-3

Process Pressure	5Kpsi	10Kpsi	15Kpsi	18Kpsi
Shear, second^{-1} (per pass)	3,410,000	4,822,000	5,646,000	6,185,000
Particle Size:				
1 pass	.3082 μm	.2337 μm	.2222 μm	.2003 μm
2 passes	.2049 μm	.1776 μm	.1751 μm	.1590 μm
3 passes	.1960 μm	.1601 μm	.1597 μm	.1544 μm

Particle Size Distribution



Particle Size (D_{50}) vs # of Passes @ Various Pressures



Summary of Results:

One pass at 18,000 psi produced a particle size of $D_{50} = 0.20\mu\text{m}$, $D_{99} = 0.36\mu\text{m}$.

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HC-2000 GMP Pneumatic HC-5000 GMP Pneumatic

The HC-2000 is our lightweight, easy to use, low pressure homogenizer. With sanitary fittings and 300 series stainless steel parts, processing with the HC-2000 meets GMP requirements. The HC-2000 is suitable for batch and continuous processing with flowrates to 2 liters/minute. The HC-5000 is identical to the HC-2000 but with higher pressure capabilities (to 5,000 psi) and flow rates to 950 ml/minute.

Pressure Range 250–2,000 psi
Pressure Range 500–5,000 psi

HC-8000 Sanitary Pneumatic

The HC-8000 complies with sanitary standards to meet demanding product specifications and tight quality control. This unit employs a flow-through, sanitary pressure transducer with digital display and generates liquid pressures up to 8,000 psi and flowrates to 1 liter/minute.

Pressure Range 1,000–8,000 psi

M-110S Small Volume Pneumatic

The M-110S is an air-powered unit designed to process smaller sample volumes than the other Microfluidizer models with greater product recovery. For samples as small as 14 ml (with >12ml recovery) up to continuous operation.

Pressure Range 3,000–23,000 psi

M-110Y High Pressure Pneumatic

The M-110Y provides the highest operating pressure of our laboratory units. It is specifically designed for applications that require optimum pressure, such as cell rupture. The M-110Y is ideally suited for improving product yield and minimizing downtime.

Pressure Range 3,000–23,000 psi

M-110EH-30 Electric-Hydraulic

The M-110 EH is specifically designed for those customers that prefer an electrically-driven unit over a pneumatically-driven one. The unit reaches pressures as high as 30,000 psi and is mounted on locking casters for mobility.

Pressure Range 2,500 - 30,000 psi

M-140K High Pressure Electric-Hydraulic

The M-140K is built to sustain prolonged high pressure demands and provide users with the opportunity to create new formulations, and improve existing products. The unit reaches pressures as high as 40,000 psi and is mounted on locking casters for mobility.

Pressure Range 8,000 - 40,000 psi

M-210EH Electric-Hydraulic

The M-210 EH Series is the pilot plant line specifically designed to utilize an electric-hydraulic pump in place of the standard air-powered pump. Results achieved on laboratory Microfluidizers will scale up to this level. These units can achieve pressures up to 30,000 psi and flowrates to 1.12 gpm. The M-210EH is mounted on locking casters for mobility.

Pressure Range 2,500–30,000 psi

M-700 Series

The M-700 Series offers pilot and production performance levels with specific features amenable to industrial applications, including coatings, waxes, inks, pigments, sealants, etc. The units are available in 15, 25, and 50 horsepower models, and can be fitted with 1 or 2 intensifier pumps that can be operated with independent product streams and flow rates.

Pressure Range to 40,000 psi

M-610 Custom Designed Electric-Hydraulic Production

The M-610 Series Production Microfluidizer is capable of flowrates to 18 gpm and can process samples from one gallon to continuous operation. These custom built units employ an electric/hydraulic intensifier pump which can be designed to generate process stream pressures up to 40,000 psi.

Pressure Range to 40,000 psi



HC-8000



M-700



M-710