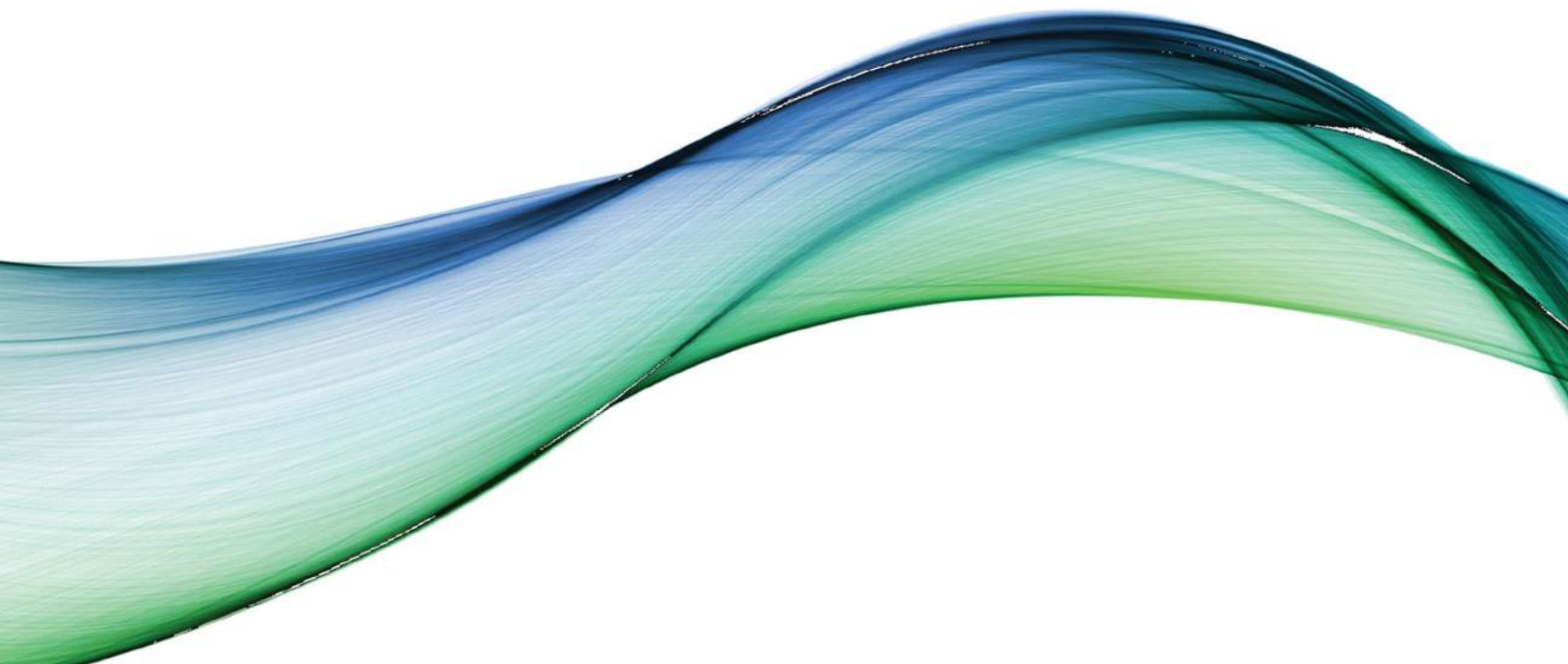
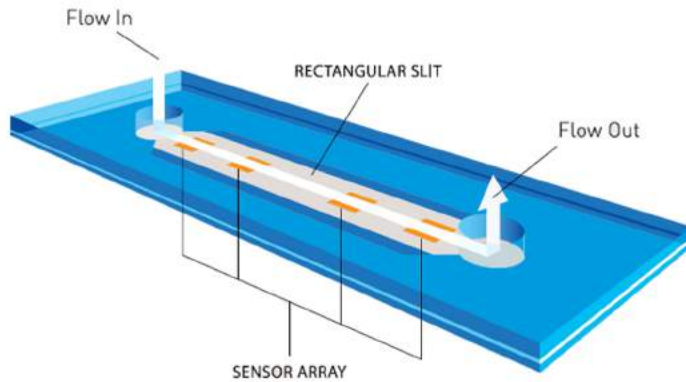




2017

Viscometers/Rheometers





VROC[®] Technology • RheoSense.com/Technology

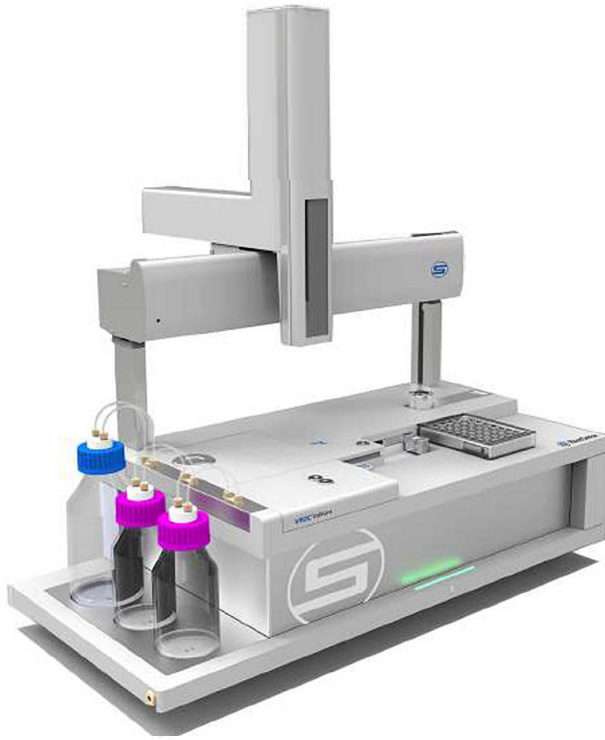
Viscometer/Rheometer-on-a-Chip, also known as VROC[®], is a combination of microfluidic and MEMS technologies that enables the accurate measurements of absolute viscosity over a wide dynamic range.

The principle is quite simple. Based on the Hagen-Poiseuille flow, as your sample flows through the flow channel, the pressure sensor array measures pressure as a position of function.

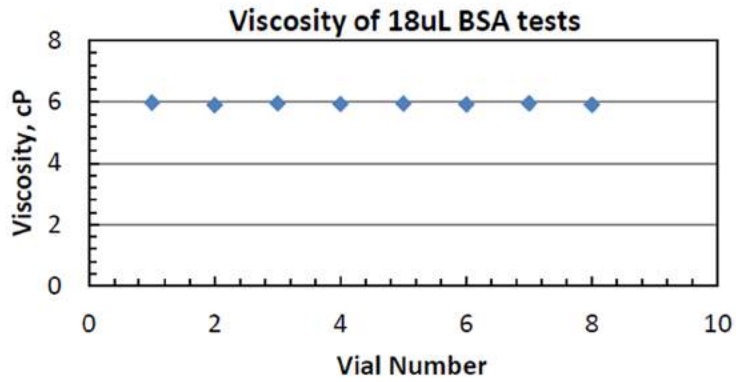
VROC[®] solutions offer multiple solutions over the conventional method of viscosity measurements including:

- Requires extremely small sample volumes
- Characterization of both Newtonian & non-Newtonian fluids
- Ability to measure at high shear rates
- Prevents evaporation and contamination of your samples

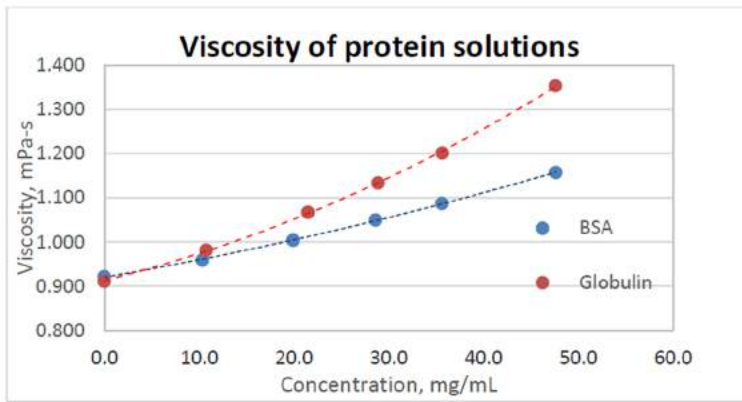
VROC[®] initium



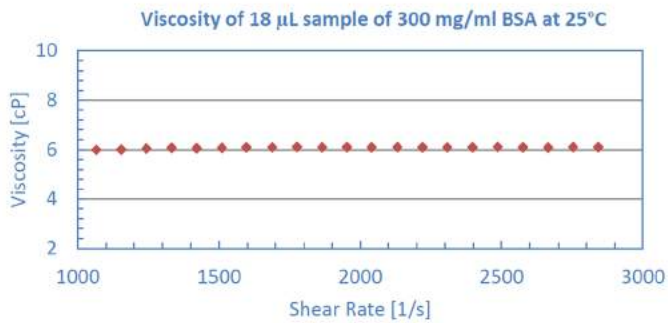
- 15 μ L of sample
- Viscosity Range: 0.2 - 100,000 cP
- Shear Rate Range: 1 - 1,600,000 1/s
- 40 Vial Rack or 96 Well Plates
- Shear Rate & Temperature Sweeps
- Newtonian & non-Newtonian Characterization
- Independent Temperature Control for Sample Storage
- 21CFR Part 11 Compliant



Microliter. Sample Volumes



Recycle. Sample Retrieval



Sensitive. High Resolution

m-VROC™ • Small Sample Viscometer

m-VROC™ is the leading viscometer capable of the most demanding applications including small sample protein therapeutics.

m-VROC™ features the widest dynamic range with small samples.

- Accuracy: 2% of Reading
- Repeatability: 0.5% of the Range
- Viscosity Range: 0.2 ~ 100,000 mPa-s (or cP)
- Shear Rate Range: 0.5 ~ 1,400,000 1/s
- Small Sample Volume: 20 µL +



<i>m</i> -VROC	m-VROC-RP3.0	<i>m</i> -VROC Viscometer with regular speed pump with software
	m-VROC-FP3.0	<i>m</i> -VROC Viscometer with fast speed pump with software

Chips	m-VROC2.5-GAXX	A05, A10, A20 A30
	m-VROC2.5-GBXX	B05, B10, B20, B30
	m-VROC2.5-GCXX	C05, C10, C20, C30
	m-VROC2.5-GEXX	E05, E10, E20, E30

°C	VROC-700-4	Water bath with temperature control from 4 - 70 °C
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hts-VROC • High Temperature

hts-VROC enables viscosity measurements up to 105 °C with a wide dynamic range.

Accuracy: 2% of Reading

Repeatability: 0.5% of the Range

Viscosity Range: 0.2 ~ 100,000 mPa-s (or cP)

Shear Rate Range: 0.5 ~ 1,400,000 1/s

Small Sample Volume: 25 µL +

hts-VROC	hts-VROC Viscometer - Fast speed pump. Includes software and a high temperature fluorinert water bath
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T-VROC-AXX	A05, A10, A20, A30
T-VROC-BXX	B05, B10, B20, B30
T-VROC-CXX	C05, C10, C20, C30
T-VROC-EXX	E05, E10, E20, E30



• e-VROC Extensional Viscosity

e-VROC measures apparent extensional viscosity, or the extensional flow of polymer solutions.

Accuracy: 0.5% of Reading

Viscosity Range: 0.2 ~ 2,000 mPa-s (or cP)

Shear Rate Range: 0.1 ~ 1,000 1/s

Small Sample Volume: 500 µL +

EVROC-RP3.0	e-VROC Viscometer with regular speed pump - includes software
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VROC-700-4	Water bath with temperature control from 4 - 70 °C
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EVROC-A20
EVROC-B20
EVROC-C20
EVROC-E20



microVISC™ Portable, Small Samples

Portable and requiring 100 microliters of samples, microVISC has been intuitively designed for any setting. In your lab or on the field, this portable viscometer can measure about 100 measurements on one battery charge.

HVROC-L	microVISC viscometer – Continuous shear & flow rate control (w. Software)
HVROC-S	microVISC viscometer – 100 incremental shear rate control (No Software)

HA00-01	microVISC A02 chip, 0 - 100 cP
HA01-01	microVISC A05 chip, 0 - 100 cP
HA02-01	microVISC A10 chip, 4 - 600 cP
HA03-01	microVISC A20 chip, 10 - 2,000 cP
HA04-01	microVISC A30 chip, 30 - 8,000 cP
HB02-01	microVISC B10 chip, 60 - 5,000 cP
HB03-01	microVISC B20 chip, 70 - 10,000 cP
HB04-01	microVISC B30 chip, 100 - 20,000 cP
HC02-01	microVISC C10 chip, 400 - 22,000 cP
HC03-01	microVISC C20 chip, 500 - 40,000 cP
HC04-01	microVISC C30 chip, 2,000 - 80,000 cP

Accuracy: 2% of Reading
 Viscosity Range: 0.2 ~ 20,000 mPa-s (or cP)
 Shear Rate Range: 0.1 ~ 5,800 1/s
 Small Sample Volume: 100 µL +



microVISC™ TC Temperature Controller

microVISC™ Temperature Controller enables precise temperature control for the portable microVISC™ Viscometer.

Temperature Range: 15 - 50 °C
 Temperature Stability: +/-0.07 °C

HVROC-T	Custom temperature controller, 15 ~ 50 °C
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HVROC-M

microVISC-m viscometer

microVISC™-m Portable, Oil Analysis

microVISC™-m measures the viscosity of an oil using ASTM methods to report both kinematic and absolute viscosity at reference temperatures, usually 40 °C, 50 °C, or 100 °C.

Used on ships, in refineries, on the go, *microVISC™-m* supplies and stores data with time stamps to monitor your oil health.

Accuracy: 2% of Reading
Viscosity Range: 0.2 ~ 20,000 mPa-s (or cP)
Shear Rate Range: 0.1 ~ 5,800 1/s
Small Sample Volume: 100 μ L +



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Download Application Notes & Data: www.RheoSense.com/Applications
Attend Our Webinars: www.RheoSense.com/viscosity-webinars