

CAV 4.1 is a fully automated, single-bath, benchtop viscometer with two 14-position sample handlers for unattended D445 processing. Each of the two tubes covers a 100-fold viscosity range at values between 0.5 mm<sup>2</sup>/s (cSt) and 10,000 mm<sup>2</sup>/s (cSt) from 40 °C to 150 °C (down to 20 °C with optional integral bath cooler).

#### Common Applications

- Formulated oil analysis
- Hydraulic oil analysis
- Additive analysis
- Marine fuel testing
- Base stock analysis
- Light and heavy fuel testing
- Waxes/paraffin
- Crude oil testing
- Glycols/polyols

# CAV<sup>®</sup> 4.1

## Single-Bath Benchtop Kinematic Viscometer

For Kinematic Viscosity of Transparent and Opaque Liquids  
ASTM D445/D446, ISO 3104/3105, IP 71, SAE J300

### D2270 Viscosity Index Calculation

- VISCPRO<sup>®</sup> software included for calculation

### D445 precision in a modern, dependable design

- Standard temperature range: 40 °C to 150 °C (down to 20 °C with TE bath cooler option)
- Viscosity range: 0.5 mm<sup>2</sup>/s (cSt) to 10,000 mm<sup>2</sup>/s (cSt) in 100-fold increments\* (easily covering the range of five separate manual glass viscometers)
- Two fully accessible 14-position sample handlers ensure reliable, unattended processing of up to 24 determinations per hour
- Removable carousels
- Automation provides an alternative to labor-intensive manual testing and reduces operator to operator variability
- A trusted CANNON viscometer platform offers reliability and dependable support

### Compact & self-contained with flexible configuration

- Simple, out-of-the-box installation
- 35% smaller footprint than CAV-2000 series, conserves lab space
- Onboard computer permits running pre-programmed test parameters without an external PC
- VISCPC PC software enables programming of user-defined test methods and permits one PC to manage and control up to four instruments
- View, print, save, and export user-configurable reports

### Reduced consumable costs

- Next generation Atlantic-style tubes reduce solvent usage and disposal costs by 50% over larger predecessor tubes
- Automated vial washing and drying enables reuse and reduces vial consumption

### Simplified maintenance & test versatility

- Modular chassis design for easy maintenance access
- Operators can physically replace tubes in minutes, eliminating the need for related service calls
- Colored status indicator bath lights provide a simple indication of operational status
- Run multiple predefined/user-defined test methods within the same sample tray
- High throughput with optional sample preheating, capable of reaching 135 °C
- Instrument includes standard dual-solvent input



#### INCLUDES

- ✓ Professional Installation\*
- ✓ VISCPC<sup>®</sup> Software
- ✓ Viscometer Tubes
- ✓ Standards
- ✓ Digital Thermometer



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# CAV® 4.1 | Single-Bath Benchtop Kinematic Viscometer

## Ordering Information

The CANNON® CAV 4.1 Single-Bath Benchtop Kinematic Viscometer comes with two 14-position sample carousels, two viscometer tubes, one set of oil viscosity standards, a case of glass vials, a high precision digital thermometer with probe, VISCPRO data storage/management software, a one year warranty, and professional installation/training (within the domestic U.S.). Specify desired factory installed options and viscometer tubes when ordering.

Instrument is stand-alone but optional computer (sold separately) is recommended for ease of calibration, connecting to LIMS (laboratory information management system), and maintaining complete audit trail.

Description	Part #
100 VAC, 50/60 Hz, 1200 watts	9725-D30
115 VAC, 50/60 Hz, 1200 watts	9725-D35
230 VAC, 50/60 Hz, 1200 watts	9725-D40

## Options

Sample Preheating, TE-Cooling, a third solvent input, and additional temperature calibration (for each temperature beyond the first) are also available for an added charge at the time of ordering.

## Accessories & Consumables

Description	Part #
Extra sample carousel (for glass vials)	68.1047
Extra sample carousel (for metal sleeves)	68.1115
Laser printer	93.6005
Metal sleeves for preheating; case of 14	68.0455
Pedestal base (fits up to two CAV 4.1 units)	68.0298
Replacement silicone bath fluid - 1 Gallon (bath requires 2.5 L)	9726-L37
Sample carousel safety cover	68.1233
Spare parts kit (for one year)	68.1116
Tube Cleaning Kit	68.3139
Vials (glass); case of 144	9717-V01
Vials (polypropylene); pack of 1,000	61.3663
Viscosity reference standards	various

## Product Specifications

Dimensions (W x D x H)	36.0 cm x 66.0 cm x 72.0 cm (14.3 in x 26.0 in x 28.5 in)
Weight	54.0 kg (130.0 lb)
Shipping dimensions (W x D x H)	81.3 cm x 53.3 cm x 99.0 cm (32.0 in x 21.0 in x 39.0 in)
Shipping weight (with all items)	96.6 kg (213.0 lb)
Max. throughput	24 tests per hour
Automated sample capacity	28 (2 x 14 positions)
Viscosity range	0.5 mm <sup>2</sup> /s (cSt) to 10,000 mm <sup>2</sup> /s (cSt) in 100-fold increments (depending on viscometer tube selection). Fast run tubes are also available.
Timing resolution	0.01 s (timing accuracy to ± 0.001 s)
Temperature range & accuracy	40 °C to 100 °C ± 0.01 °C (down to 20 °C with cooling option) Up to 150 °C, ± 0.03 °C
Minimum sample/ solvent volume	8 mL sample <sup>†</sup> /15 mL solvent per test <i>*as little as 3 mL with fast run tubes</i>
Operating conditions	15 °C to 30 °C, 10% to 75% relative humidity (non-condensing), installation Category II; Pollution Degree 2
Electrical specifications	100 VAC, 50/60 Hz; 115 VAC, 50/60 Hz; 230 VAC, 50/60 Hz; 1,200 watt power consumption
Compliance	CE Mark; EMC directive (2004/108/EC); Low voltage directive (2006/95/EC); HI-POT (1900 VDC, 60 sec.); ROHS
Data output	USB

## Atlantic-Style Viscometer Tubes\*

Standard Tube	Part #	Standard Tube	Part #
KV Range in mm <sup>2</sup> /s (cSt)			
1-100	12.0690	30-3000	12.0644
2-200	12.0698	40-4000	12.0645
3-300	12.0696	50-5000	12.0646
4-400	12.0699	60-6000	12.0694
6-600	12.0697	70-7000	12.0695
10-1000	12.0642	100-10000	12.0647
20-2000	12.0643		

\*Some upper viscosity measurements may be limited by test temperature and sample type. Ubbelohde-style tubes (for volatile products that are not a pure solvent and high melt waxes) are also available in 100-fold increments and fast run 10-fold increments from 0.5 mm<sup>2</sup>/s (cSt) to 10,000 mm<sup>2</sup>/s (cSt).

<sup>†</sup>Installation outside the domestic U.S. may incur additional charges.

CANNON Instrument Company® provides a variety of physical property testing equipment and consumables (vials, bath fluids, and reference materials) for your testing needs. To learn more, contact [sales@cannoninstrument.com](mailto:sales@cannoninstrument.com).



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