

SAYBOLT VISCOSITY



K21414 Saybolt Viscosity Bath (SV4000) with K21404 Auto Viscosity Timers

Test Method

Determines the time required for 60mL of sample to flow through a calibrated orifice under precisely controlled conditions. Saybolt Universal Seconds (SUS) is the standard measurement for lubricants, insulating oils and lighter fuel grades, and Saybolt Furol Seconds (SFS) is used for heavier oils and bitumens.

SV3000 Saybolt Viscosity Bath and New SV4000 Saybolt Viscosity Bath for Automatic Viscosity Timing

- Microprocessor control of temperature between ambient and 240°C (464°F)
- Four tube capacity
- Dual digital displays show setpoint and actual temperature
- Selectable temperature scale - Celsius or Fahrenheit
- Automatic timing option for simplified, accurate measurement of efflux times
- Conforms to ASTM D88, D244, E102, and related specifications

Constant temperature bath with available automatic timing feature for viscosity determinations using Saybolt viscometer tubes and orifices. Microprocessor PID circuitry assures precise temperature control within ASTM specified tolerances throughout the operating range of the bath. Simple push-button controls and dual digital displays permit easy setting and monitoring of bath temperature. Two place calibration offset is provided. Accommodates four viscometers and four 60mL receiving flasks. Sliding draft shields and a chemical-resistant alignment plate facilitate handling of the flasks, and glare-free fluorescent backlighting is provided for easy viewing of the samples. *Communications software (RS232, etc.) ramp-to-set, and other enhanced features are available at additional cost. Contact your Koehler representative for additional information.*

Automatic Timing Option – At the push of a button, the automatic timer starts the sample flow, senses the 60mL end point, and digitally records and displays the efflux time in 0.1 seconds resolution with an accuracy of 0.05%. Automatic timing improves testing accuracy and convenience, eliminating the chain and cork assembly and the need to manually time each sample. Timer installation is available in any configuration from 1 to 4 positions.

Bath Construction and Safety Features – Insulated bath interior is constructed entirely of heavy gauge stainless steel. A built-in overflow pipe and drain valve simplifies filling of the bath fluid to the proper level. Chemical resistant top plate provides excellent insulation and is easily removed to allow for cleaning of the bath interior. A cooling coil for tap water or refrigerated coolant is provided for operation at near-ambient temperatures. Steel cabinet has leveling feet and a chemical resistant polyurethane-epoxy finish.

Specifications

Conforms to the specifications of:
 ASTM D88, D244, E102; AASHTO T72; FTM 791-304
 Capacity: 4 viscometer tubes
 Temperature Range: ambient to 464°F (240°C)
 Temperature Stability: ±0.05°F (±0.03°C)
 Bath Capacity: 5 gal (19L)
 Recommended Bath Medium: water or suitable heat transfer fluid
 Electrical Requirements: **CE**
 115V 60Hz, single phase, 12.3A
 220-240V 50/60Hz, single phase, 6.4A

Included Accessories

Cleaning Plunger Chained Corks
 Oil Strainer Withdrawal Tube
 Tube Nut Wrench Orifice Wrench
 Port Closures Port Covers
 Thermometer Supports

Dimensions l x w x h, in. (cm)

29x25x33 (74x63½x84)
 Net Weight: 65 lbs (29½kg)

Shipping Information

Shipping Weight: 82 lbs (37kg)
 Dimensions: 10 Cu. ft.

Ordering Information

Catalog No.		Order Qty
SV3000 Saybolt Viscosity Bath		
K21410	SV3000 Saybolt Viscosity Bath, 115V 60Hz	1
K21420	SV3000 Saybolt Viscosity Bath, 220-240V 50/60Hz	
SV4000 Saybolt Viscosity Bath for Automatic Viscosity Timing		
K21414	SV4000 Saybolt Viscosity Bath, 115V 60Hz	1
K21424	SV4000 Saybolt Viscosity Bath, 220-240V 50/60Hz	
Automatic Saybolt Viscosity Timing Sensor		
K21404	Automatic Saybolt Viscosity Timing Sensor, 115V 60Hz	1-4
K21494	Automatic Saybolt Viscosity Timing Sensor, 220-240V 50/60Hz <i>Each port can accommodate one sensor for automatic timing operation on SV4000 Saybolt Viscosity Baths.</i>	1-4
Accessories		
355-001-002	Silicone Heat Transfer Fluid, 1 Gallon Container	5
355-001-004	Silicone Heat Transfer Fluid, 5 Gallon Container minimum flash point 620°F (326°C) <i>Please refer to separate listing on page 8 for specifications.</i>	1

Please contact Koehler Customer Service about the retrofitting of SV3000 Series Saybolt Viscosity Baths with the new K21404 Automatic Saybolt Viscosity Timing Sensors.

 Software compatible, inquire with Koehler Customer Service.

SAYBOLT VISCOSITY

Saybolt Viscometer Tubes and Orifices

- Conforming to ASTM D88, E102 and related specifications
- Choice of brass or stainless steel tubes

Viscometer Tubes—Precisely machined brass and stainless steel tubes meeting ASTM requirements. Tubes mount vertically in Saybolt Viscometer Baths and accommodate stainless steel orifices interchangeably. Supplied with mounting hardware.



Orifices—Stainless Steel Universal and Furol Orifices meeting ASTM specifications. Orifices insert in viscometer tubes using K22030 Orifice Wrench (supplied with viscometer baths). Also available - Kansas Road Oil Orifice (requires K22039 wrench). Universal and Furol Orifices are available with a calibration certificate.

Ordering Information

Catalog No.

Viscometer Tubes

- K22009** Saybolt Viscometer Tube, Brass
K22309 Saybolt Viscometer Tube, Stainless Steel

Orifices

- K22010** Saybolt Universal Orifice
K22010-C/F Saybolt Universal Orifice with calibration certificate
K22020 Furol Orifice
K22020-C/F Saybolt Furol Orifice with calibration certificate
K22029 Kansas Road Oil Orifice

Accessories

- 332-003-003** Borosilicate Glass Receiving Flask, 60mL for SV3000
332-003-014 Borosilicate Glass Receiving Flask, 60mL for SV4000
K22030 Orifice Wrench for Universal and Furol Orifices
K22039 Orifice Wrench for Kansas Road Oil Orifices
K22050 Socket Wrench
K22060 Oil Strainer
K22070 Cleaning Plunger
K22080 Displacement Ring. Insert in viscometer tube galley for bituminous materials testing. Meets ASTM E102 specifications.
K22090 Withdrawal Tube
K22011 Thermometer Support

SAYBOLT VISCOSITY THERMOMETERS

Catalog Number	Thermometer	Test Temperature		Range
		°F	°C	
250-000-17F	ASTM 17F	66 to 80°F	—	66 to 80°F
250-000-17C	ASTM 17C	—	19 to 27°C	19 to 27°C
250-000-18F	ASTM 18F	100°F	—	94 to 108°F
250-000-18C	ASTM 18C	—	34 to 42°C	34 to 42°C
250-000-19F	ASTM 19F	122 and 130°F	—	120 to 134°F
250-000-19C	ASTM 19C	—	50 and 54.4°C	49 to 57°C
250-000-20F	ASTM 20F	140°F	—	134 to 148°F
250-000-20C	ASTM 20C	—	60°C	57 to 65°C
250-000-21F	ASTM 21F	180°F	—	174 to 188°F
250-000-21C	ASTM 21C	—	82.2°C	79 to 87°C

Catalog Number	Thermometer	Test Temperature		Range
		°F	°C	
250-000-22F	ASTM 22F	210°F	—	204 to 218°F
250-000-22C	ASTM 22C	—	98.9°C	95 to 103°C
250-000-77F	ASTM 77F	250°F	121°C	245 to 265°F
250-000-108F	ASTM 108F	275°F	135°C	270 to 290°F
250-000-78F	ASTM 78F	300°F	149°C	295 to 315°F
250-000-109F	ASTM 109F	325°F	163°C	320 to 340°F
250-000-79F	ASTM 79F	350°F	177°C	345 to 365°F
250-000-80F	ASTM 80F	400°F	204°C	395 to 415°F
250-000-81F	ASTM 81F	450°F	232°C	445 to 465°F

For NIST traceable certified thermometers, please refer to the ASTM Thermometer section on pages 184 through 191.

Test apparatus for lubricants, insulating oils, and heater fuel grades:

Catalog No.		Order Qty
K21410	Saybolt Viscometer Bath	1
K22009	Viscometer Tube	4
K22010	Universal Orifice	4
332-003-003	Receiving Flask (SV3000)	4
332-003-014	Borosilicate Glass Receiving Flask, 60mL for SV4000	4
355-001-001	White Technical Oil	5
250-000-17F	Series ASTM Thermometers or	
250-000-17C	Series ASTM Thermometers	

Test apparatus for bituminous materials:

Catalog No.		Order Qty
K21410	Saybolt Viscometer Bath	1
K22009	Viscometer Tube	4
K22020	Furol Orifice	4
K22080	Displacement Ring	4
332-003-003	Receiving Flask (SV3000)	4
332-003-014	Borosilicate Glass Receiving Flask, 60mL for SV4000	4
355-001-002	High Temperature Heat Transfer Fluid	5
250-000-17F	Series ASTM Thermometers or	
250-000-17C	Series ASTM Thermometers	