

Kinematic Viscosity of Asphalts (Bitumen)

ASTM D2170 EN/ISO 12595



Completely stainless steel
Conforms to ASTM D2170 & D445
High precision stability $\pm 0.01^\circ\text{C}$
Large windows
Easy to operate
RS232 communication

General

This test method covers procedures for the determination of kinematic viscosity of liquid asphalts (bitumens), road oils and distillation residues of liquid asphalts (bitumens) all at 60°C (140°F) and of asphalt cements at 135°C (275°F). The Tamson TV2000 or TV4000 viscometer bath are specially designed for tests that require ultra-precise temperature control, or processes that need to be followed visually. Both models are fitted with double windows in front and rear walls. The windows are formed with two panes of tempered safety glass separated by 20 mm air space. Visibility through the bath is excellent.

Construction

The stainless steel construction with 25 mm thick glass wool insulation ensures exceptionally stable temperatures which is further improved by an ingenious stirring mechanism with baffle plates. All wetted parts are made of stainless steel and PTFE,

Item	Unit	TV2000	TV4000
Ordering code 230V 50~60Hz		00T0782	00T0772
Ordering code 115V		00T0784	00T0774
Range	Ambient.. $230^\circ\text{C}/..446^\circ\text{F}$		
Reading	$^\circ\text{C}$ or $^\circ\text{F}$ menu selectable		
Interface	RS232		
Setting \pm	$[\text{C}]$	± 0.01	
Stability*	$[\text{C}]$	± 0.01	
Uniformity*	$[\text{C}]$	± 0.01	
Heating 230V	[kW]	2.8	2.8
Heating 115V	[kW]	2.3	2.3
Heaters		2	2
Bath volume	[L]	20	40
Number of lids		3 or 4	7 or 8
Window	[mm]	140*285	270*285
Opening lid	[mm]	51(dia.)	51(dia.)
Opening bath	[mm]	130*165	260*240
Depth	[mm]	300	300
Length	[mm]	350	400
Width	[mm]	470	590
Height	[mm]	590	590
Weight	[kg]	40	41
Power	[watt]	3100	3100
Frequency	[Hz]	Suited for both 50 & 60	
CE	Conforms to CE regulation		

* Value measured in water @ $+50^\circ\text{C}/+122^\circ\text{F}$

providing resistance against all usual bath fluids. The bath is fitted with adjustable feet for leveling. The cover of the bath has a number of round 51 mm holes with lids, for suspending glass capillary viscometers in holders. To work at temperatures lower than ambient $+5^\circ\text{C}$, use of cooling must be made. cooling fluid can be pumped through the cooling coil inside the apparatus. Tap water or a combination with the TLC10-3 or TLC15-5 can be used for this purpose. All models are fitted with double windows in front and rear walls. The windows are formed with two panes of tempered safety glass separated by 20 mm of air space. Visibility through the bath is excellent. A power plug on the back is mounted to provide power for an optional illumination unit.

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Agitation

A vane type stirrer messing bearings move the bath fluids past the heaters and then from under the main baffle plate, thus directing the freshly heated fluid inside bath.

Span

All baths can be operated from ambient + 5 up to + 230°C (41..446°F). with the use of the build in cooling coil, span lies 5°K above the temperature of the cooling liquid.

Accuracy and set point

The set point can be set in steps of 0.01°. The system overall accuracy is with in $\pm 0.01^{\circ}\text{K}^*$. After the temperature control is stable the set point can even be adjusted with $\pm 0.005^{\circ}\text{K}$

Viscometer arrangement

Seven openings with lids, arranged in two rows of resp. 4 and 3 or 8 openings (2*4 openings), are provided for the TV4000.the TV2000 offers 3 openings (2+1 lid) or 4 openings (2+2). These openings of 51 mm diam. will accommodate glass capillary in holders (see our next page). Additionally two separate thermometers can be placed through two 12.5 mm holes in the cover.

Safety

The bath conforms to CE regulations. It also is equipped with a mechanical adjustable and resettable safety thermostat. Advanced safety features are microprocessor control of:

- Electronic- and processor system
- Control and feedback from each heating element
- System accuracy
- System error results in total cut off from the power supply.

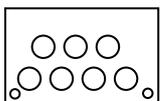
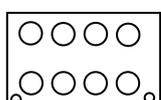
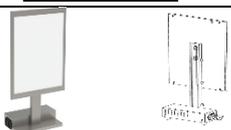
Optional equipment specifically for ASTM D2170

See next page.

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Accessories

Item		TV2000	TV4000
Cover 3 lids (ø 51mm) + 2x hole for thermometer (ø 12,5mm)		Standard	
Cover 4 lids (ø 51mm) + 2x hole for thermometer (ø 12,5mm)		Optional 03T3211	
Cover 7 lids (ø 51mm) + 2x hole for thermometer (ø 12,5mm)			Optional Standard
Cover 8 lids (ø 51mm) + 2x hole for thermometer (ø 12,5mm)			00T0729
Illuminator "Z41" stand alone 85 ~ 230V/50-60Hz		00T0909	
Illuminator "Z41" backpanel 85 ~ 230V/50-60Hz		00T0908	
Timer		10T6090	
Silicon oil suitable from 20 to 150°C		1 can of 20L (08T0001)	2 cans of 20L (08T0001)
Thermometer holder		2* 00T0239	
Thermometer		2* 25T0940 (ASTM47C), or 2* 25T0981 (ASTM110C) or 1* TT3 (see separate specification sheet)	
Cannon Fenske Opaque (CFO) Viscometer		25T0802 t/m 25T0813 (see separate specification sheet viscometers)	

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Accessories

Item	TV2000	TV4000
Zeitfuchs Cross Arm viscometer (ZCA)		25T0890 t/m 25T0899 (see specification sheet viscometers)
BS/IP/RF viscometers		25T1030 until 25T01040 (see specification sheet viscometers)
Stopper for viscometer CFO/ZLA		06T1742 (pack of 12 pieces)
Pipet balloon		08T0021
Viscometer holder for Cannon Fenske Opaque		10T6071
Viscometer holder for Zeitfuch Cross Arm		10T6327
Viscometer holder for BS/IP/RF		10T6051
Reference standards		See specification sheet. General purpose viscosity oils and high-temperature viscosity standards

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