

TANAKA

AUTOMATIC PETROLEUM TESTERS



TANAKA SCIENTIFIC LIMITED

COLD BEHAVIOR TESTER SERIES

State-of-the-art Peltier coolers have been adopted for cooling. The Peltier cooling system does not require a large chiller and methanol, making it a highly reliable, low-maintenance and eco-friendly system.

POUR/CLOUD POINT TESTERS: MPC SERIES

MPC series determines Pour Point(PP) and Cloud Point(CP) with a small specimen size and in a shorter test time. For PP determination, the unique "Air Pressure Method" prescribed in ASTM D6749 yields equivalent results to the conventional tilt method's and a much better repeatability/reproducibility(1°C/2°C respectively, when tested at 1°C intervals).

Since a faster cooling rate is used, test time has been cut to 1/3 to 1/2 of conventional tilt method's. When both CP and PP need to be determined, productivity further improves, since CP and PP are determined consecutively in one run.

Test stds:

PP: ASTM D6749, D97, ISO 3016, etc.

CP: ASTM D2500, ISO 3015, etc.



Model: MPC-602



Model: MPC-102L

	Model: MPC-102A	Model: MPC-102L	Model: MPC-302	Model: MPC-602
Type	Bench top, 1 position, with air cooled Peltier cooler	Bench top, 1 position, with liquid cooled Peltier cooler	Bench top, 3 positions, with liquid cooled Peltier cooler	Bench top, 6 positions, with liquid cooled Peltier cooler
Measuring range	+51 to -25°C in 25°C ambient	+51 to -65°C when used with 1 set of TCU-40B chiller(opt)	+51 to -65°C when used with 2 sets of TCU-40B chiller(opt)	+51 to -65°C when used with 3 sets of TCU-40B chiller(opt)
Display	VFD module	VFD module	VFD modules (×3)	VFD modules (×6)
Ext. port	RS-232C	RS-232C	RS-232C	RS-232C
Size	230W×480D×385H mm	230W×480D×385H mm	800W×500D×800H mm	800D×550D×850H mm
Weight	19kg	19kg	75kg	100kg
Power cons.	500W	500W	1.0kW	1.5kW

AUTOMATED CFPP TESTERS



AFP series automatically executes Cold Flow Plugging Point(CFPP) tests. Meniscus detectors are mounted on a holder, allowing for not only easy operation but also reliable detection when pipette is frosted.

Test stds:

ASTM D6371, IP 309, etc.



Model: AFP-102

Chiller unit, Models TCU-40A/B



- *temp range: -40°C to ambient
- *power consumption: 700W
- *cooling capacity: 349W at 20°C
- *dimensions: 320W × 590D × 725H mm
- *dry weight: 60kg
- *type-A: pumping & suction(for ATG-7)
- *type-B: pumping only(for MPC & AFP)

	Model: AFP-102	Model: AFP-202
Type	Bench top, 1 position, with liquid cooled Peltier cooler	Bench top, 2 positions, with liquid cooled Peltier cooler
Measuring range	Ambient to -60°C when used with 1 set of TCU-40B chiller(opt)	Ambient to -60°C when used with 1 set of TCU-40B chiller(opt)
Display	VFD module	VFD modules(×2)
Ext. port	RS-232C	RS-232C
Size	W350×D550×H480mm	W550×D600×H670mm
Weight	27kg	50kg
Power cons.	500W	1kW



Model: AFP-202



KINEMATIC VISCOSITY MEASURING SYSTEM — Model AKV-201

Model AKV-201 has been designed for automatic determination of **Kinematic Viscosity**.

Once sample is set, the series of process including timing, cleaning/drying, and reporting are fully automated. AKV-201 is an economical bench top system which saves not only the technicians' time but also valuable laboratory floor space.

- **test stds:** ISO 3104, ASTM D445, IP71, etc.
- **type:** bench top automatic KV measuring system with 2 viscometers in 1 bath
- **range:** 1 to 10,000 mm²/s
- **viscometers:** modified Lanz-Zeitfuchs type
- **bath temp:** preset at 30, 40, 50, 75 & 100 (+1 temp point available as option between 20-100)
- **size/dryweight:** 530W x 560D x 930H(mm) / 75kg
- **power consumption:** 2.2kW



KINEMATIC VISCOSITY BATH — Model KV-6

Model KV-6 has been designed for **manual determination of kinematic viscosity**.

Microprocessor and built-in platinum resistance probe allows wide control range (20 to 150), one-touch temperature selection and on-screen temperature display.



Optional 6-ch Quartz Timer, Model DSW-6

- **test stds:** ISO 3104, ASTM D445, IP71, etc.
- **applicable viscometers:** Cannon-Fenske or Ubbelohde type (with optional holder) x 7
- **bath temp:** preset at 25, 40, 50, 80, 100 and 135 . Preset temperature can be changed at the factory between 20 and 150 (option)
- **precision:** +/-0.01 at 20 to 100
- **size/dryweight:** 400W x 380D x 662H(mm) / 33kg
- **power consumption:** 1.8kW

For 20 to 30 , connect the built-in cooling pipe to tap water or a recirculating water chiller.



AUTOMATED ANILINE POINT TESTER — Model AAP-5

Model AAP-5 automatically determines aniline point for wide range of samples. The use of special infrared detector gives the instrument it's ability to see through dark/opaque samples such as power generation fuels and marine diesel oils. The measuring cell can be easily removed and placed on an analytical balance for weighing viscous samples which are solid at ambient temperature. The measuring cell can be cleaned without disassembling it, which makes the cleaning easier and safer.

- **test stds:** ISO 2977, ASTM D611, etc.
- **samples:** transparent or opaque/dark (<8.0 on ASTM color scale) petroleum products
- **range:** RT to 170 (338 °F), below RT with optional jacketed cell and external chiller.
- **sample cell:** modified U-tube
- **detection:** by photo-electric detector
- **size/weight:** 230W x 455D x 685H(mm) / 15kg
- **power consumption:** 100W



AUTOMATED SOFTENING POINT TESTER — Ring and Ball Method: Model ASP-5

Model ASP-5 automates **softening point test of bitumen** and other materials by utilizing photo-electric device with a wide light beam, which assures reliable detection. Generation of harmful vapor from overheated glycerin is prevented by the safety shutdown. Furthermore, ASP-5 is small enough to be installed in a fume hood.

- **test stds:** ASTM D36, etc.
- **type:** ring and ball, 2 tests
- **range:** RT to 200 (392°F)
- **detection:** by a photo transmitter/receiver
- **size/weight:** 240W x 455D x 380H(mm) / 13kg
- **power consumption:** 1.5kW



AUTOMATED FLASH POINT TESTERS

Tanaka has been known for its innovation in the automated petroleum testers, and in 1976 the first microprocessor-controlled flash point tester was delivered to the market while the industry was still struggling the less reliable and far less versatile relay-sequence technology. **Simplicity and ease of operation** have been further enhanced in this 7th generation model series.

■ Interchangeable ignition sources:

The ignition flame is automatically lit with an electric pilot coil when a test is initiated. (All models) Also, this electric pilot coil can be used as an electric ignition source if an electric ignition is preferred. (Models ATG-7 and APM-7 only. See photo.)

■ Single action setting:

After setting the test cup in the instrument, just lower the arm assembly onto the test cup to set all the necessary components for the test (i.e., the test cup lid, temperature sensor, flash detector, ignition source and stirrer, depending on the model). (All models)

■ Traceable temperature calibration:

By simply setting a traceable thermometer right next to the PT-100 temperature sensor and running a regular flash point test to record the thermometer readings, user can easily carry out a fully traceable temperature calibration. (All models)

■ Advanced fire containment system:

Model ACO-7 is equipped with a metallic shutter that covers the test cup automatically when a sustained fire is detected. (photo)

■ Asphalt version Cleveland Open Cup:

When testing the flash point of bitumen, surface film often forms, and it needs to be skimmed to attain the right test result. The asphalt version ACO-7 with an automatic surface film skimmer is available. (photo)

■ Modular design:

The modular design, which consists of a control unit and a test unit, yields:

- *flexibility when installing the instrument, and
- *future option to control two test units with just one control unit. (Some restrictions apply) (photo)

■ Additional capabilities:

With an optional ROM, capabilities such as data storage function and Fahrenheit capability can be added.



Electric ignition on model APM-7



Fire containment shutter on model ACO-7



Skimmer on ACO-7 asphalt version



Modular design

TAG CLOSED CUP FLASH POINT TESTER ————— Model ATG-7



Model ATG-7 automates **Tag Closed Cup(TCC)** flash point test. The ease of operation of the highly acclaimed predecessor models have been further improved by employing an arm assembly that allows an easy one-hand setup.

- More reliable and easy-to-maintain flash detector: a low mass thermocouple
- Draft protection: an acrylic windshield
- Quick cooling after test: bath liquid automatically exchanged after a test.

- **test stds:** ASTM D56, etc
 - **range:** ambient to 95°C(*)
 - **ignition source:** gas flame or electric coil (interchangeable)
 - **size/weight:** 230W x 480D x 385H(mm) / 21.5kg
 - **power consumption:** 0.5kW
- *ATG-7 requires supply of cooling liquid. For down to the ambient, tap water is suitable. For sub-ambient, inquire.



PENSKY-MARTENS CLOSED CUP FLASH POINT TESTER — Model APM-7



Model APM-7 automates **Pensky-Martens Closed Cup(PMCC)** flash point test.

- Cup cover and stirrer installed on an swing arm assembly for easy one-hand set-up
- More reliable and easy-to-maintain flash detector: a low mass thermocouple
- Draft protection: an acrylic windshield
- Quick cooling after test by a high velocity fan

- **test stds:** ISO 2719, ASTM D93/IP34 (procedures A & B), etc
- **range:** 40 to 370°C
- **ignition source:** gas flame with electric pilot or electric coil. (interchangeable)
- **size/weight:** 230W x 480D x 385H(mm) / 24kg
- **power consumption:** 0.7kW



CLEVELAND OPEN CUP FLASH POINT TESTER ————— Model ACO-7



Model ACO-7 automates **Cleveland Open Cup(COC)** flash point test.

- Dual electric pilots for gas flame: turns on and off automatically to turn on/off the gas flame.
- Easy-to-maintain ionization rings for flash detection
- Quick cooling after test by a high velocity fan

- **test stds:** ISO 2592, ASTM D92/IP36, etc.
 - **range:** 80 to 400°C
 - **ignition source:** gas with 2 pilot electric coils
 - **size/weight:** 230W x 455D x 385H(mm) / 20kg
 - **power consumption:** 1kW
- Asphalt version with automatic surface film skimming is available.**



CLEVELAND OPEN CUP FLASH POINT TESTER — with 6-position carousel: Model ACO-T602



ACO-T602 automatically carries out **COC** flash point test of up to **6 samples continuously**. For large sample numbers, this carousel model reduces the burden on the laboratory personnel.

- Easy programming: Up to 6 types of sample data can be stored and later recalled for easy programming of routine tests.
- Electric ignition: Reliable, easy, and safe

- **test stds:** ISO 2592, ASTM D92/IP36, etc.
- **type:** programmable with 6-position carousel
- **ignition source:** electric coils x 2
- **safety:** heater cut-off and fire containment lid
- **size/weight:** control unit:230W x 455D x 110H (mm) / 6kg test unit: 405W x 515D x 400H (mm) / 32kg
- **power consumption:** 1.5kW



AUTOMATED DISTILLATION TESTER ————— Model AD-6

Model AD-6 automatically performs distillation test of petroleum products as well as narrow boiling range samples. The 6th generation automated distillation tester has been developed to further enhance the ease of use and friendliness to the environment.



- Easy operation: Menu-driven programming
- Small size: 400Wx530Dx700H. Smallest footprint fits on a lab bench easily.
- Fully self-contained design: For ease of use and higher reliability
- Ecology: Cooling by Peltier coolers. CFC free.
- Fire containment system: N₂ injection with mechanical shutter(std) or CO₂ gas injection(opt)
- Optional Windows software: for monitoring, programming, and data storage.

● **test stds:** ISO3405, ASTM D86/850/1078*, etc.
*with options

● **range:** RT to 300°C / RT to 400°C

● **corrections:** loss, barometric, hesitation point, etc.

● **test parameters:** programmable prior to a test and can be recalled at any time.

● **condenser bath:** metallic bath with Peltier coolers

● **size/weight:** 400Wx520Dx710H(mm) / 55kg

● **power consumption:** 1.5kW

AD-6 requires N₂ gas for fire containment system



CARBON RESIDUE TESTER ————— Micro Method: Model ACR-M3



ACR-M3 automates the vaporizing/coking process of **Micro carbon residue test**, the result of which has been found well correlated with conventional Conradson method's. Furthermore, due to its more consistent process, it yields better precision. This second generation model has been further improved for its ease of use and test throughput.

● **test stds:** ISO 10370, ASTM D4530, etc.

● **range:** RT to 500°C

● **N₂ gas flow rate:** automatically regulated, and displayed on the front panel

● **size/weight:** 350W x 390D x 460H(mm) / 21kg

● **power consumption:** 1.6kW

Model ACR-M3 requires N₂ gas supply.



CARBON RESIDUE TESTER ————— Conradson Method: Model ACR-6



ACR-6 automates the cracking/coking process of **Conradson carbon residue test**. The microprocessor controlled oven requires less experience to conduct the tedious process and therefore yields more consistent test result.

- Easy operation: Optimum heater output for prescribed burning process is programmed with ease prior to a test. Once a test starts, no further adjustment needs to be done.

● **test stds:** ISO 6615, ASTM D189, IP 13, etc.

● **process control:** by microprocessor

● **ignition detection:** by sheathed thermocouple

● **size/weight:**

control unit: 250W x 360D x 190H(mm) / 7.5kg

oven: 190W x 260D x 440H / 5.5kg

● **power consumption:** 2.2kW



AUTOMATIC VAPOR PRESSURE TESTER — Reid Method, Demi Size: Model AVP-30D

Model AVP-30D automatically measures **Reid vapor pressure (RVP)** utilizing a miniaturized bomb. While ease of operation and smaller instrument size are achieved with the smaller size bombs, test result precisely agrees with that of the regular size Reid bomb.

- Compact size: Width is merely 400mm.
- Reliable/efficient see-saw shaking mechanism.

- **related test stds:** ISO 3077, ASTM D323, IP69, etc
 - **type:** bench-top with 2, 3, or 4 Demi-size bombs
 - **range:** 0 to 196kPa (2kgf/cm²)
 - **bomb:** stainless steel bomb with approx. 60% in length and 30% in volume of regular Reid bomb
 - **size/dry weight:** 400W x 600D x 740H(mm) / 45kg
 - **power consumption:** 2kW
 - **option:** manometer, air compressor
- AVP-30D comes with either 2, 3, or 4 bombs.**
When inquiring, specify the number of bombs.



X-RAY SULFUR METER — with 12-position carousel: Model RX-620SA

Model RX-620SA determines **total sulfur in petroleum products using energy-dispersive X-ray fluorescence (EDXRF)** method, which is a quick, non-destructive, economical but yet accurate method. Once a sample is set, the total sulfur is determined automatically in 300sec (typical). RX-620SA is equipped with a 12-position carousel, for higher productivity.

- **test stds:** ISO 8754, ASTM D4294, etc.
 - **carousel:** 12 positions
 - **range:** 0.003 to 6.00wt%
 - **repeatability:** 10ppm (as per ASTM D4294 designation)* at 0.008wt%
 - **size/weight:** 560W x 515D x 245H(mm) / 29kg
 - **power consumption:** 200W
- *ASTM D4294 designates the repeatability in the range (r). In terms of standard deviation, 5ppm.**



X-RAY SULFUR METER — Model RX-360SH

Model RX-360SH is a single test version of **X-ray sulfur meter** taking the same measuring principle as that of RX-620SA. Compact housing with a carrying handle and 2-way power source (100-240VAC or 12VDC battery) allows such applications as spot-checking in the field. The only consumable are small piece of Mylar film and printing paper, making the running cost at minimal.

- **test stds:** ISO 8754, ASTM D4294, etc.
 - **range:** 0.003 to 6.00wt%
 - **repeatability:** 10ppm (as per ASTM D4294 designation)* at 0.008wt%
 - **size/weight:** 420W x 350D x 140H (mm) / 12.5kg
 - **power consumption:** 100W
- *Refer to the note for RX-620SA**



COLORIMETER FOR PETROLEUM PRODUCTS — Model ACL-2

Model ACL-2 automatically determines **Saybolt, ASTM** and other colors utilizing the **Tri-Stimulus method** prescribed in ASTM D6045, which generates equivalent test results with the conventional manual methods' with up to ten times better precision, in typically 10 seconds. Since no subjective judgment needs to be called, a perfect traceability is achieved.

- **test stds:** ASTM D6045, JIS K2580.
- **type:** Tri-stimulus filter colorimeter
- **color scales:** Saybolt, ASTM, Gardner and Platinum-Cobalt scales
- **sample cells:** glass cells or optional flow cells
- **size/weight:** 400W x 400D x 190H(mm) / 12.2kg
- **power consumption:** 130W



Other TANAKA products:

- Manual Distillation Tester
- Manual Flash Point Testers



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