QUALITEST™

AUTOMATIC FLASH POINT TESTER – PENSKY-MARTENS CLOSED CUP

STANDARDS

ASTM D93
IP 34
ISO 2719

APPLICATIONS

Automatic Flash Point Tester – Pensky-Martens Closed Cup

Qualitest’s QualiFPT™-CC-Auto is a state-of-the-art Automatic Flash Point Tester designed for accurate and repeatable determination of the flash point of petroleum products using the Pensky-Martens closed cup method, fully compliant with ASTM D93.

This advanced instrument provides a safe, reliable, and fully automated solution for labs and industries performing quality control, product classification, and compliance testing for flammable and combustible liquids.


QUALITEST
QualiFPT-CC-Auto
Automatic Flash Point Tester

What Is Flash Point Testing?

The flash point of a material is the lowest temperature at which it emits enough vapor to ignite in air in the presence of an ignition source. It is a critical parameter for determining the flammability and safety classification of fuels, oils, solvents, and other volatile substances.

Flash point data is essential for:

- Classifying and labeling hazardous materials
- Ensuring compliance with transport and safety regulations
- Quality assurance in petroleum refining, lubricants, chemicals, and coatings industries

Pensky-Martens Closed Cup Method – ASTM D93

The ASTM D93 standard specifies the Pensky-Martens Closed Cup method for determining the flash point of liquids with a viscosity above 5.5 mm^2/s (cSt) at 40°C, or that contain suspended solids or tend to form surface films.

This method is commonly used for:

- Fuel oils (diesel, biodiesel blends)
- Lubricating oils
- Solvents
- Paints and varnishes
- Other viscous or solid-containing liquids

ASTM D93 offers three procedural methods:

- Procedure A: For fuels and liquids with flash points between 40°C and 360°C

- Procedure B: For materials with potential surface films or those prone to forming skin
- Procedure C: For biodiesel blends and other specified fuel mixtures

Our QualiFPT™-CC-Auto supports all three procedures with precise temperature control, automatic ignition, and programmable test parameters.

Applications

- Petroleum & Petrochemical Industry – Testing fuels, base oils, lubricants
- Paints & Coatings – Verifying solvent flash points
- Pharmaceuticals & Chemicals – Assessing flammability characteristics
- Transport & Safety Compliance – Ensuring materials meet regulatory flash point requirements
- Environmental & Quality Labs – Standardized material classification

Optimize your laboratory's safety testing and ensure regulatory compliance with the precision and automation of the QualiFPT™-CC-Auto Automatic Flash Point Tester.

FEATURES

Key Features of QualiFPT™-CC-Auto Flash Point Tester

- Fully automatic operation with minimal operator intervention
- Conforms to ASTM D93, ISO 2719, IP 34, and related global standards
- Suitable for a wide range of flammable liquids and petroleum products
- Enhanced safety features including over-temperature protection and enclosed ignition
- Touchscreen interface with data storage and export capability
- Rapid test cycles and high repeatability for high-throughput labs

Performance Characteristics

- Features an embedded computer with an 8-inch color LCD touchscreen and an all-English interface.
- Displays real-time information, including expected flash point, relevant standard, maximum flash point, detection sensitivity, and test status.
- Supports automatic control for heating rate, ignition, result evaluation, cooling, and more.
- Uses a stepper motor for stirring, ensuring stable and precise speed, fully compliant with ASTM D93 standards.
- Stores up to 500 test results; data can be transferred to a LIMS system.
- Offers both electronic and gas ignition options.

THEORY & METHOD

The Pensky-Martens Closed Cup Method

The QualiFPT™-CC-Auto Automatic Flash Point Tester flawlessly executes the exact science behind the Pensky-Martens Closed Cup method. This specific scientific procedure determines the exact temperature where liquid vapors ignite inside a sealed environment.

By strictly controlling the heat ramp and utilizing an internal stepper motor to keep the stirring rate completely uniform, the procedure eliminates temperature lag. A highly responsive micro thermocouple detector captures the exact millisecond of the flash, making the physical reaction incredibly predictable.

Here is how the automated testing process handles the physical chemistry:

The Closed-Lid Environment

You pour your liquid sample into a sealed brass cup. As the system warms the liquid, the integrated stepper motor continuously spins the paddle, keeping the fluid moving smoothly. This constant motion stops thermal gradients from forming, forcing the gaseous vapors to gather evenly inside the small air pocket at the top of the chamber.

The Ignition Point

The actual flash point is simply the lowest temperature (this model handles anywhere from 40 to 300°C) where a brief fire occurs when the shutter slides open. The machine introduces either an electronic or gas ignition source, and the micro thermocouple automatically registers the chemical reaction, completely removing visual guesswork.

Barometric Pressure Adjustments

Daily weather fluctuations heavily alter vapor pressure and throw your numbers off. The internal computer mathematically adjusts the results to standard atmospheric pressure (101.3 kPa), ensuring your data remains absolutely correct whether your laboratory sits at sea level or high altitude.

Methodology Standards and Crucial Variables

To ensure the testing data satisfies rigorous regulatory audits, this methodology executes standardized procedures like ASTM D93 (fully supporting Procedures A, B, and C), EN ISO 2719, and IP 34. The procedure demands a highly specific, steady heating crawl, which is why managing the following variables is absolutely critical:

- **Pacing the Temperature:** If you rush the heat application, the chemical data falls apart. For instance, heating raw sulfur too fast can drop its measured flash point from a warm 207°C all the way down to 167°C, which creates a massive error. The internal programming applies a rate of 5 to 6°C per minute for Method A, or a much slower 1 to 1.5°C per minute for Method B. Keeping the temperature climb strictly restrained ensures the liquid and the air above it stay perfectly matched.
- **Continuous Agitation:** Keeping the liquid moving actively stops localized hot spots from skewing the final readings. The precision stepper motor handles this effortlessly until the exact moment of the ignition trial.

- **System Uncertainty:** Minute errors originating from the heat sensors, pressure gauges, and rounding calculations easily add up. The Automatic Flash Point Tester factors all of these variables together through the 8-inch color LCD touchscreen, computing a highly reliable final number while handling the ignition trials and automatic cooling entirely on its own.

TECHNICAL SPECIFICATIONS

Automatic Flash Point Tester – Pensky-Martens Closed Cup Technical Specifications

Parameter	Specification
Measurement range	40~300℃
Flash point detector	Micro thermocouple
Heating speed	A method: 5~6℃/min
	B method: 1~1.5℃/min
	C method: 3.0±0.5℃/min
Heater	220V 0.5KW (110V is also available)
Gas source	Liquefied petroleum gas/Butane
External dimensions	384 × 418 × 328 (mm)
Weight	15kg

QUALITEST™

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