Huazheng®

HZ261
Closed Cup Flash Point Tester

USER MANUAL

Huazheng Electric Manufacturing (Baoding) Co.,Ltd

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This instrument is a high-temperature precision testing device. Please thoroughly read this operation manual before use and operate with caution to avoid accidents!

I. Overview

This closed cup flash point tester is designed and manufactured in accordance with GB/T 261 Determination of Flash Point — Pensky-Martens Closed Cup Method. It is applicable to measure the closed cup flash point temperature of petroleum products including diesel oil, kerosene, insulating oil and fuel oil following the procedures specified in this standard.

Featuring advanced design, convenient operation and reliable performance with accurate test results, this equipment serves as an ideal substitute for imported counterparts. It is widely adopted in flash point and fire point testing of petroleum products across railway, aviation, electric power and petroleum industries, as well as universities, research institutes, metrology and inspection laboratories.

II. Main Technical Specifications And Parameters

·Power Supply: AC 220V±10%, 50 Hz

·Temperature Measurement Measuring Range: Ambient temperature ~ 300 ℃

·Repeatability: ≤2 ℃ Accuracy: 0.5% FS

·Heating Rate: Compliant with GB/T 261

·Stirring Speed: 100 rpm

·Ignition Mode: Electronic ignition, gas flame length 3 mm ~ 4 mm

·Ambient Temperature: 10 ℃ ~ 40 ℃

·Relative Humidity: ≤80%

·Total Power Consumption: ≤1000 W

·Optional Mercury-in-Glass Thermometers meeting GB/T 261-2008

(1) Range: -5 ℃ ~ 110 ℃, graduation 0.5 ℃

(2) (2) Range: 20 ℃ ~ 150 ℃, graduation 1.0 ℃

(3) (3) Range: 90 ℃ ~ 370 ℃, graduation 2 ℃

III. Instrument Features

The tester mainly consists of heating unit, manual lid opening/closing assembly, built-in stirring device and wind shield. High control precision minimizes manual operation errors. Compact overall dimension allows the main unit to be placed inside a fume hood, reducing damage of oil fume to operators. The heating unit adopts aluminum plate electric heating with open-flame-free design for high safety. Temperature is regulated via solid-state voltage regulator and potentiometer; heating power is continuously adjustable with digital voltmeter display for intuitive and easy temperature adjustment.

IV. Working Principle

Under test conditions specified in GB/T 261, fill the test cup with sample and heat the oil-filled cup. The lowest temperature at which the mixture of petroleum vapor and surrounding air ignites when exposed to a test flame is defined as the flash point of the sample. For detailed operation procedures, refer to the national standard GB/T 261 Determination of Flash Point — Pensky-Martens Closed Cup Method enclosed.

V. Operation Procedures

5.1 Pre-Test Preparation

(1)This is an automatically controlled instrument. Read the operation manual thoroughly before use.

(2)Study GB/T 261 Determination of Flash Point — Pensky-Martens Closed Cup Method to fully master standard test methods, procedures and requirements.

Prepare all test utensils and materials as required by GB/T 261.

(3)Inspect the instrument to ensure the working environment meets the specified conditions in this manual.

(4)Check the equipment housing for reliable earthing; the power cord must be properly grounded.

5.2 Unpacking Inspection

(1)Unpack the instrument and check for any damage during transportation.

(2)Verify the instrument model and all accessories against the packing list.

(3)Commission the instrument only after full inspection with no defects found.

5.3 Pre-Operation Setup

(1)Place the instrument on a stable and sturdy workbench free from mechanical vibration, corrosive gas, contamination and electromagnetic interference, then connect the power cord.

(2)Connect gas supply (liquefied petroleum gas recommended) to the gas inlet via pressure reducing valve and check for air leakage (not required for electronic ignition type).

(3)Clean the test cup thoroughly with petroleum ether.

5.4 Test Steps



Figure 2 Control Panel

Turn on stirring first, then adjust the voltage knob while observing the voltmeter to control the heating rate in line with GB/T 261 requirements.

Detailed operating steps:

(1)If water content of sample exceeds 0.05%, dehydration treatment is mandatory. Add freshly calcined and cooled salt, sodium sulfate or anhydrous calcium chloride into the sample. No heating is needed for samples with estimated flash point below 100 ℃; heat to 50–80 ℃ for samples with estimated flash point above 100 ℃. After dehydration, take the upper clear liquid for testing.

(2)Wash the oil cup with unleaded gasoline and blow dry with clean air.

(3)Fill the oil cup with sample; the temperature of sample and cup shall not exceed the dehydration temperature of the sample. Fill the sample up to the annular mark, fit a clean and dry lid, insert the thermometer, and cool the oil cup in air bath to ambient temperature (20±5 ℃).

(4)Switch on heating and stirring power supply.

(5)For samples with flash point higher than 50 ℃, heat uniformly with continuous stirring. When temperature reaches 40 ℃ below the expected flash point, adjust heating rate to 2–3 ℃ per minute when 20 ℃ below expected flash point, and keep stirring throughout.

(6)When temperature is 10 ℃ below expected flash point: for samples with flash point over 104 ℃, perform ignition test every 2 ℃. Keep stirring during the whole test except during ignition. For ignition, lower the flame into the vapor space above the cup within 0.5 s, hold for 1 s and quickly retract to original position. If no flash is observed, resume stirring and repeat ignition following this clause.

(7)Record the temperature shown on thermometer immediately when a distinct blue flame first appears above the liquid surface as the flash point test result. After initial flash, continue ignition per step 6 and consistent flash shall occur. If no secondary flash is

observed after the first ignition flash, replace the sample and retest; the test result is valid only if the same phenomenon occurs repeatedly.

(8)Turn on cooling fan for equipment cooling after test completion.

(9)Measure actual atmospheric pressure P (Pa) with calibrated barometer and calculate correction value via corresponding formula.

VI. Safety Precautions

Keep the instrument clean and avoid sample splashing onto equipment surfaces.

Reliable earthing must be completed before operation to guarantee operator safety.

Contact our company promptly once any fault occurs; do not disassemble the instrument arbitrarily.

Operate strictly in accordance with specifications during testing to prevent fire hazards; a fire extinguisher shall be available nearby.

Note: Product photos, overall dimensions and weight are for reference only. Minor modifications may be implemented without prior notice due to product upgrades.

VII.Packing List

No.	Item	Qty
1	Certificate of Conformity	1
2	Operation Manual	1
3	Main Unit	1
4	Thermometer	1
5	Fuse Tube	1
6	Flexible Shaft	1
7	Power Cord	1
8	Test Oil Cup	1
9	Gas Tube（with Hose Clamp）	1