





Automatic asphalt softening point tester

1、 Purpose

This instrument is designed and manufactured according to the requirements stipulated by national standard GB/T4507 "Determination of petroleum asphalt softening point", national transportation industry standard JTJ052 "Highway Engineering asphalt and asphalt mixture test Rules" T0606 "asphalt softening point test (Global Law)". Applicable to the road petroleum asphalt, coal asphalt, liquid petroleum asphalt and other kinds of asphalt softening point determination, is the asphalt production enterprises, highway, bridge construction units and the relevant colleges and universities, research institutions of choice instrument.

This instrument adopts full computer control, camera video measurement ball fall, 7 inch color screen display screen. The instrument also has linear temperature heating, bath stirring evenly, can test two samples at the same time, automatic detection of sample softening point characteristics, high degree of automation, quick and convenient Test, reliable test results, is an intelligent instrument for asphalt softening point test.

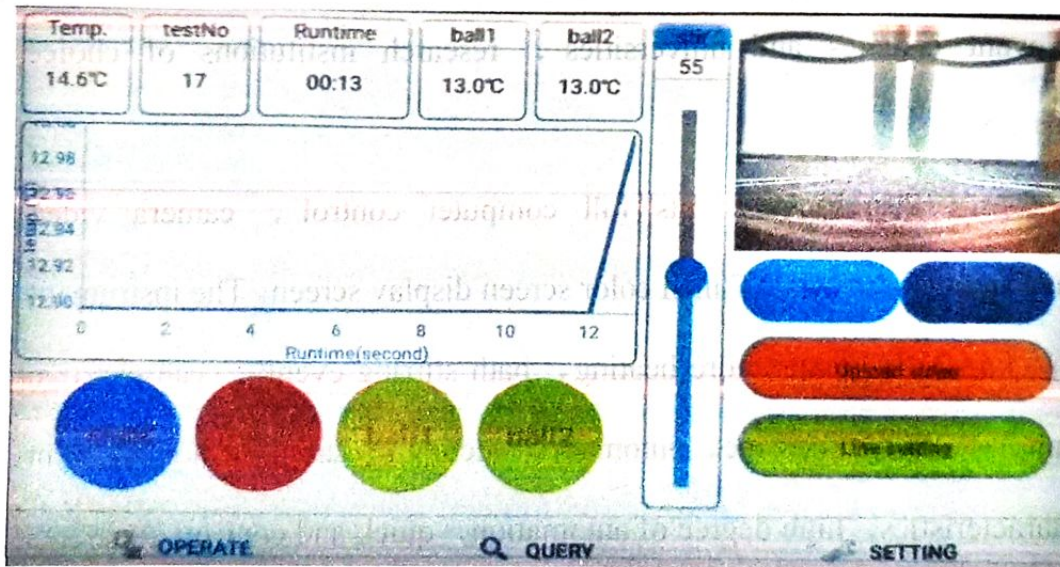
2、 Technical indicators

1. Power supply voltage: 220V, 50HZ;
2. Temperature range: room temperature -180°C;

3. Temperature resolution: 0.1°C;
4. Agitator: mixing speed can be adjusted continuously;
5. Heating rate: three minutes after the automatic adjustment to 5.0 ± 0.5 °C/min;
6. Softening point results: camera video recognition;
7. Heating power: 600W;
8. Environmental conditions: the ambient temperature is less than 35°C, no air convection phenomenon.

3. Operating instructions

3.1 Operation page instructions



"Start" button: Start the trial.

"Stop" button: Stop the trial.

"Small Ball 1" button: Small ball 1 falls.

"Small Ball 2" button: Small ball 2 falls.

"Upload Video" button: Upload the video of the trial process.

"Off-line Settings" button: Sets the drop stop position of the ball.

The motor stirring speed pulls the sliding up and down to make it bigger and smaller down.

3.2 Set the position of ball falling and crossing the line

Left and right positions

Up and down positions

Detect width

Color threshold

Judging condition

Coordinate X=0 Y=0

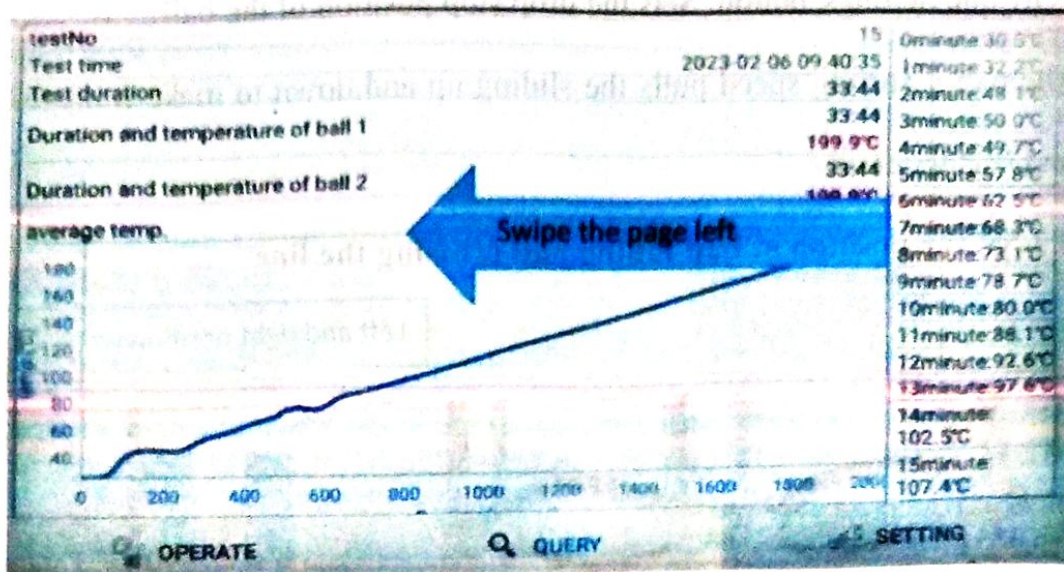
Ball 1 boundary		
X	+	126
Y	+	337
L	+	193

Ball 2 boundary		
X	+	447
Y	+	342
L	+	178

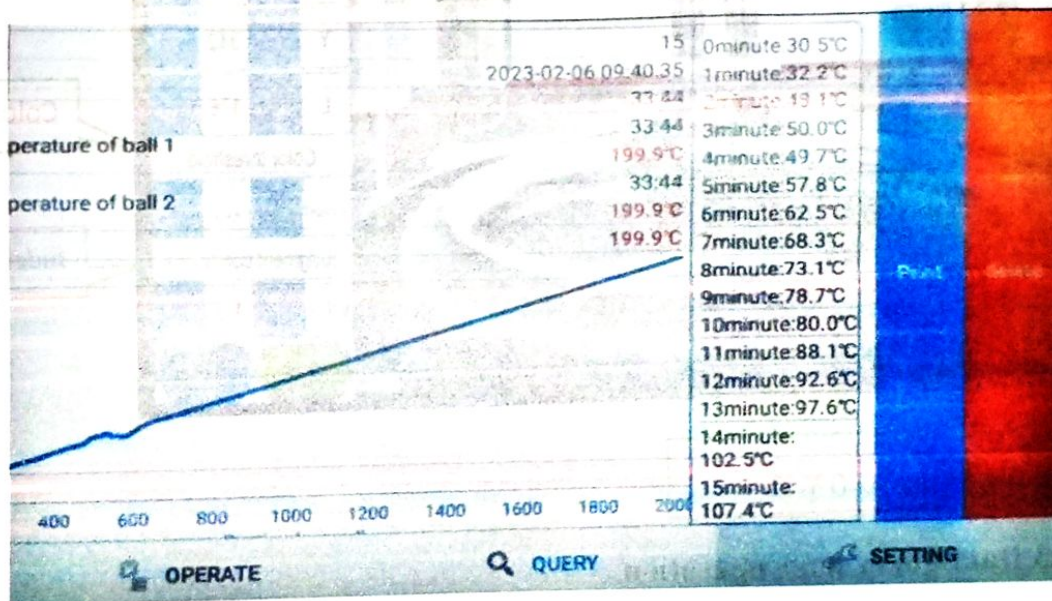
Color threshold		
value		128

Judgment conditions		
value		1/8

3.3 Data query page operation



Select the trial page and swipe left to bring up the Print Delete page



The pop-up page selects action matters

3.4 Set the page Settings

Calibration correlation	Parameter setting	Other settings
Cali p1 11178 >	PP1 50 >	Mixing speed 0 >
Cali p2 22350 >	PP2 50 >	Max temp. 200°C >
Equipment related	PP3 9 >	Video recognition <input checked="" type="checkbox"/>
SN 240623E8	PP4 8 >	Save video <input checked="" type="checkbox"/>
Restart/Exit >	PP5 60 >	Download the latest(2022-12-29)

OPERATE
 QUERY
 SETTING

Do not operate for non-professionals!

4、Test methods and steps

4.1 Preparation

1. Place the sample ring on the bottom plate of the sample coated with glycerin talcum powder isolator, and slowly inject the prepared asphalt sample into the sample ring until it is slightly above the ring surface.

The asphalt sample is made according to the T0602 procedure in JTJ052-2000. If the estimated softening point of the sample is higher than 120°C, the sample ring and the sample bottom plate (without glass plate) should be preheated to 80-100°C.

2. After the sample is cooled at room temperature for 30min, hold the sample ring with a ring clamp and remove the sample on the ring surface with a hot scraper so that it is flush with the ring surface.

4.2 Test steps

1. Place the sample ring with the sample plate in a constant temperature water tank with 5 ± 0.5 water for at least 15min , and place the metal bracket, steel ball and steel ball positioning ring in the same water tank.
2. The beaker is filled with newly boiled and cooled distilled water to 5°C . The water level is slightly lower than the depth mark marked on the vertical rod.
3. Take out the sample ring containing the sample from the insulation tank and place it on the circle of the middle plate of the support.

In the hole, put on the positioning ring, then put the whole ring frame into the beaker and adjust the water surface to the depth.

Mark and keep the water temperature at $5 \pm 0.5^{\circ}\text{C}$. Note that no air bubbles should be attached to any part of the ring holder. Power on the instrument.

4. Put the steel ball in the center of the sample in the middle of the positioning ring press the "start" button on the host, the electric tube starts to work , so that the water temperature in the cup in 3min to maintain $5 \pm 0.5^{\circ}\text{C}/\text{min}$ speed rise.

5. As the sample is heated, the steel ball drops gradually until the steel ball contacts the surface of the bottom plate. At this time, the instrument will automatically stop heating, read and record the time and temperature displayed (softening point).

Manual mode: In the experimental operation, when the steel ball on the right specimen falls, press the "ball 1" key to confirm the fall of the steel

ball, and when the steel ball on the left specimen falls, press the "ball 2" key to confirm the fall of the steel ball. At this time, the instrument will display the recorded experimental data, showing the temperature recorded every minute, the fall time and the temperature and average temperature of two softening points.

Automatic mode: In this mode, the drop of the steel ball will be detected automatically. During this experiment, attention should be paid to avoid bubbles generated by heating, which will affect the experimental results.

Note:(1) The stirring speed should not be too fast in the experiment (to avoid water vortex affecting the experimental results).

(2) The temperature rise accuracy will be affected if the stirring is not used in the experiment.

5、 Report

The same sample was tested twice in parallel. When the difference between the two measured values met the requirements of repeatability test accuracy, the average value was taken as the softening point test result, accurate to 0.5°C.

6、 Matters needing attention

1. The use and storage of instruments must be handled with care to avoid damage to the glass products and temperature sensors.
2. After each test, the instrument must be wiped clean and cut off the power supply of the instrument.

3. Do not modify the experimental parameters of the instrument to affect the test results.

7. Packing list

1. Main machine 1

2. Softening point bracket (photoelectric frame) in the beaker 1

3. Beaker 1

4. Temperature sensor 1

5. Heater wire 1

6. Power cord 1

7. Rings and balls 1

8. Mixer 1

9. Instructions 1

10. Certificate of qualification 1



Heat



Sensor



USB



Net cable



AC220V8A



Switch



HR-2806



02000187

Ring & Ball Apparatus

Grade:

No

Date 20

CL-CivilLab Manufacturer Company, China