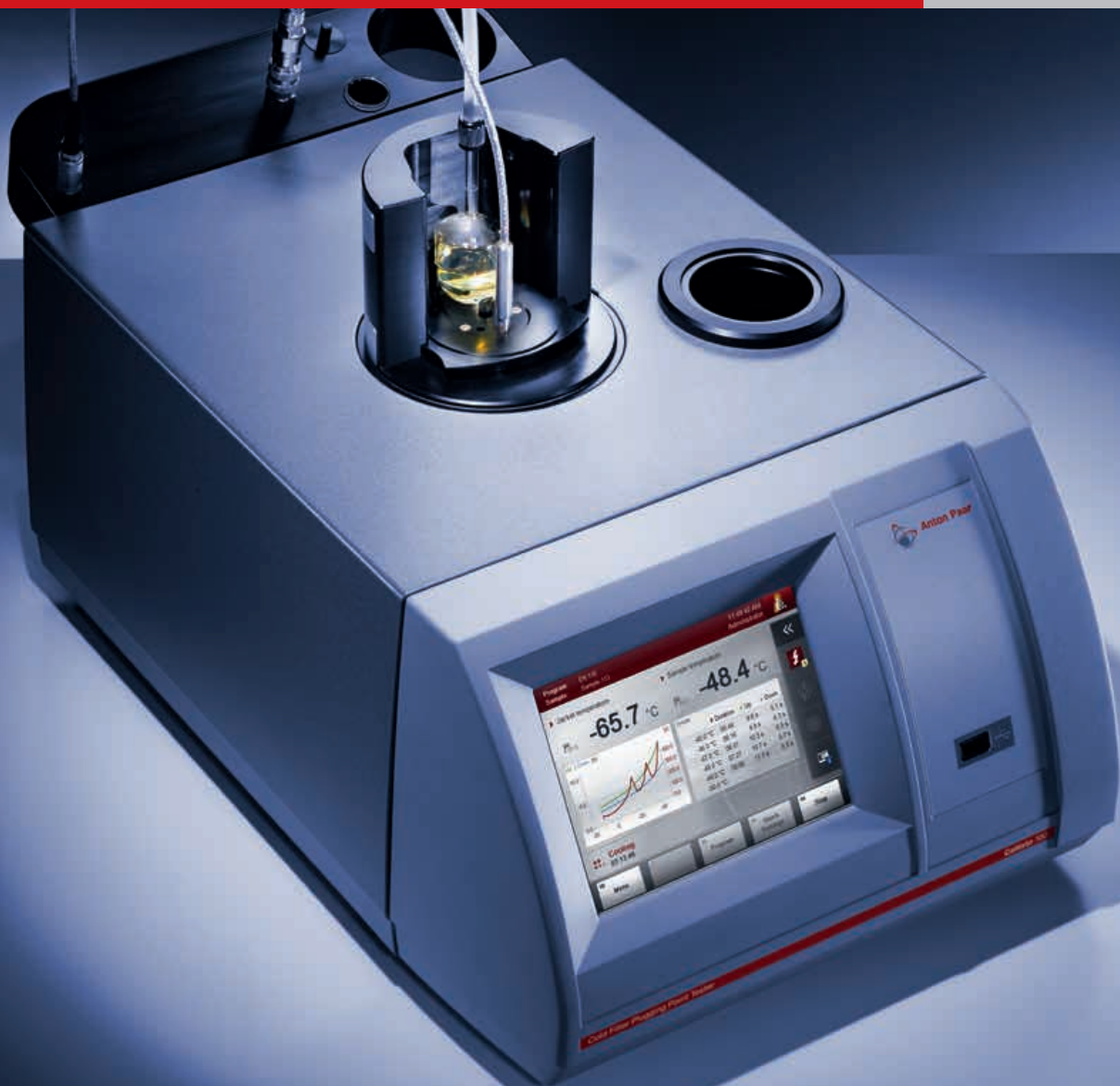


Callisto 100

Cold Filter Plugging Point Tester

::: Cold Flow Properties



Cold Filter Plugging Point

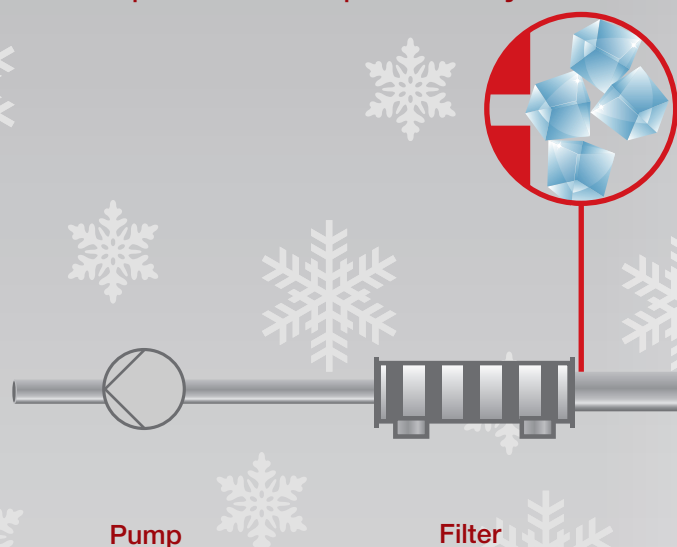
The Cold Filter Plugging Point method is used to describe the procedures for determining low-temperature operability in diesel fuel, biodiesel, blends and gas oils. The CFPP is a critical property used to forecast the lowest temperature at which a fuel will freely flow through filters in a diesel engine system.

All diesel fuels contain wax. When the temperature of the fuel decreases, at some points wax crystals will begin to precipitate. If a certain amount of wax precipitates, the crystals can block fuel flow through filters and other restricted passages in the fuel system.

Callisto 100 is a fully automated, compact, stand-alone CFPP tester operated by touchscreen. It contains all required components according to the standard method. Testing and results are in full compliance with ASTM D6371, EN 116, EN 16329, JIS K2288 and IP 309.

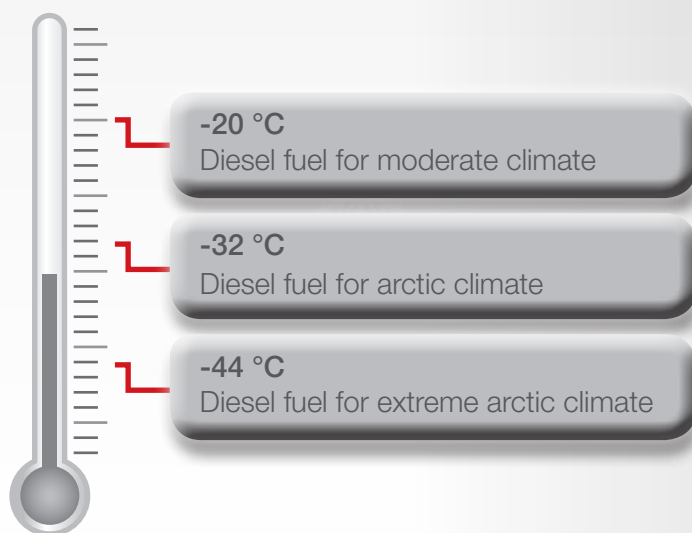
To cool the sample in the cooling jacket an external cooling system is required. Based on more than 30 years of Anton Paar's experience in Peltier element technology, Callisto 100 comes with a newly developed state-of-the-art Peltier element technology which allows the connection of a methanol-free cooling system.


Low-temperature operability



Low-temperature operability is an issue with diesel fuels because they contain paraffin waxes that become solid at ambient winter-time temperatures.

Climate requirements for diesel fuel





Wax crystals may block the diesel fuel flow through the filter.

Tank

When this happens, the wax may plug the fuel filter, making it impossible for the fuel system to deliver fuel to the engine.

There are a number of procedures in refineries to improve a fuel's low-temperature operability, e.g. by treating a fuel with additives or manufacturing it from less waxy crude oils.

Callisto 100 is the first choice for evaluating the quality and drivability of diesel fuels at low temperatures or even under extreme arctic climate conditions.

Test principle

According to the strict guidelines described in the applicable standards, a given portion of a fuel is cooled under the specified conditions and is drawn into a pipette under a controlled vacuum through a standardized wire mesh filter. The test is repeated when the sample cools by 1 °C. At the temperature at which the sample can no longer be filled into (or emptied out of) the pipette in 60 seconds the test is stopped, and the temperature is displayed as the CFPP test result.

Benefits at a glance

- ▶ Error-free detection
- ▶ Easy and intuitive operation
- ▶ High sample throughput
- ▶ Convenient cleaning routines
- ▶ Peltier elements for high homogeneity of the cooling jacket supported by an external methanol-free cooling system

Callisto 100

Easy and Precise CFPP Testing

Error-free detection

Thanks to contact-free infrared detection technology the complete filtration unit is easily accessible and has the same detection position in each test. This assures high accuracy and repeatability.

Easy and intuitive operation

Start your tests immediately: Callisto 100 comes with pre-programmed standard test methods to select from the menu. If you wish to customize your test routines, you can create and store up to 90 individual user programs.

Testing accuracy is enhanced by self-explanatory calibration procedures for the temperature and vacuum – a standard delivery feature of Callisto 100.

The large color display indicates the sample and jacket temperature in real time and provides additional graphical information about the aspiration and back flow times to observe the temperature behavior of the sample during the test.

For statistics, Callisto 100 offers a result history for 1000 tests as well as the statistical evaluation of test results with min/max/average according to the test method. Callisto 100 provides versatile connectivity via a USB stick, e.g. to export test results as Excel or PDF files, or to connect a bar code reader for sample identification.





High sample throughput

Callisto 100 has minimum downtime. Once you have prepared your second complete filtration unit and put it into the storage place at the rear of the instrument, you are ready to go for the next test run within seconds.

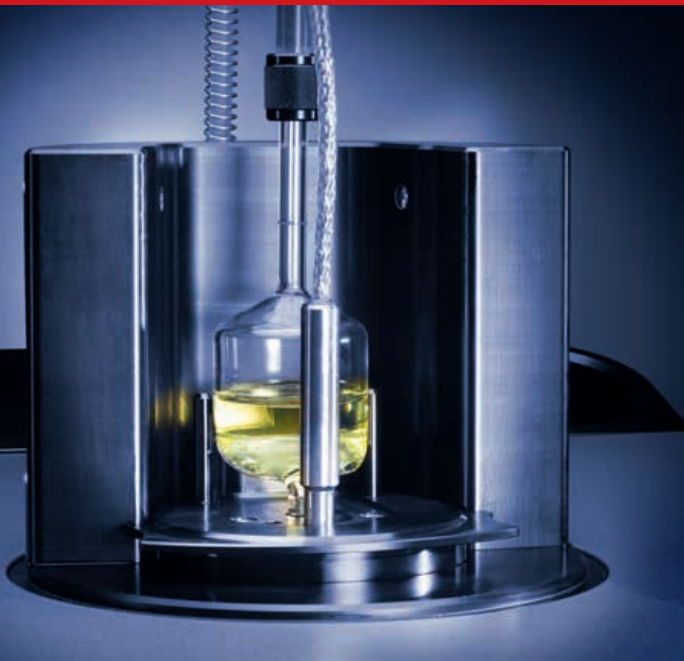
Convenient cleaning routines

To make the cleaning of the pipette as easy as possible, a programmable automated cleaning routine can be initiated at the push of a button.

Excellent homogeneity of the cooling jacket

State-of-the-art Peltier element technology ensures outstanding homogeneity of the cooling jacket which is the most critical and decisive parameter for a correct CFPP value determination. Furthermore, you can use Callisto 100 for manual cloud and pour point measurements.

Explore in Detail



Accurate detection

Thanks to contact-free infrared detection technology, the complete filtration unit is easily mounted into and dismantled from the cooling jacket. This results in the same accurate detection position for each test and therefore guarantees excellent repeatability of test results.

The pipette is not shielded and has no thermal insulation. In addition, Callisto 100 delivers excellent detection, even when the pipette is frosted. There is no interference from daylight.

Extended cooling profiles

In addition to the well-established stepped cooling method, Callisto 100 provides the recently released new standard method EN 16329 with linear cooling. The EN 16329 is now part of the EN 590 European Diesel specification as an alternative test method to EN 116-1997.

Callisto 100 requires an external cooling device: a methanol-free chiller system with antifreeze is already sufficient to reach a minimum jacket temperature of $-67\text{ }^{\circ}\text{C}$ and to measure samples with a CFPP value below $-35\text{ }^{\circ}\text{C}$.



High flexibility and efficiency

For more flexibility and fast handling, the complete filtration unit is easily disassembled for cleaning and re-assembled for the next CFPP test. This procedure is required by the standard methods to verify the cleanliness and dryness of all elements in order to obtain precise test results.

Once you have prepared your second complete filtration unit and put it into the additional storage place at the rear of the instrument, you are ready to go for the next test run within seconds.

Callisto 100 has minimal downtime between two tests, therefore guaranteeing high throughput for maximized lab efficiency.



Technical Specifications

Standard methods

ASTM D6371, EN 116, EN 16329, JIS K 2288, IP 309

| Operation | |
|--|--|
| Detection | 2 infrared contactless detection barriers |
| Temperature range of measuring chamber | -70 °C to 30 °C (accuracy according to applied standard test method) |
| Measuring range | -51 °C to 20 °C |
| Vacuum | Electronically controlled |
| Cooling profiles | Programmable stepped or linear (from 6 °C/h to 100 °C/h) |
| Temperature measurement | °C or °F, Pt100 |
| Cleaning | Programmable cleaning cycles |
| Password security | Multi-level password protection |
| Calibration | <ul style="list-style-type: none">▶ Automatic calibration routine for sample and jacket temperature and vacuum measurement▶ Temperature probe correction table |
| Languages | English and German |
| Documentation | |
| Data memory | <ul style="list-style-type: none">▶ 1000 results▶ 90 user-defined programs |
| Data export | <ul style="list-style-type: none">▶ Export measurement results to memory stick (pdf, Excel)▶ Print data on a ticket printer or all supported Anton Paar printers |
| Interfaces | 3x USB (back), 1x USB (front), 1x RS232, 1x LAN, 1x VGA |
| Data input options | Bar code reader, keyboard, mouse |
| Display | Capacitive color touchscreen |
| Requirements and dimensions | |
| Mains supply | AC 100 V - 240 V, 50/60 Hz, 290 VA |
| Ambient temperature | 10 °C to 35 °C (50 °F to 95 °F) |
| Air humidity | max. 80 % relative humidity |
| External cooling unit | User-supplied or available from Anton Paar as an accessory |
| Cooling liquid connections | Hose nozzles with inner diameter 8 mm (0.3 inches) |
| Cooling liquid volume | <ul style="list-style-type: none">▶ Water minimum 2 L/min▶ Water-glycol minimum 3 L/min; 220 W cooling power at -20 °C |
| Temperature of the coolant | -23 °C to 10 °C working range |
| Coolant | <ul style="list-style-type: none">▶ -23 °C to -21 °C: jacket temperature down to -67 °C▶ -20 °C to -10 °C: jacket temperature down to -51 °C▶ -10 °C to 10 °C: jacket temperature down to -34 °C |
| Dimensions | 340 mm x 580 mm 310 mm (W x D x H) |
| Weight net | 14 kg |

