



Cf^o Cold Filter Plugging Point

Powered by Icon

All Icon products are...

Easy to use: with an intuitive multilingual graphic user interface on a large armoured-glass wipe-clean touch-screen display.

Certified to global standards: ATEX, IECEx, UKEx, TIIS, EACEx, and ETL approved to give absolute confidence and peace of mind in hazardous areas and manufactured under an ISO9001:2015 certified Quality Management System.

Robust and fully explosion proof: with no air or inert gas purging required for safe operation in explosion hazard areas.

Highly efficient: with low sample consumption, sample flow monitoring, and minimal or no utility requirements.

Safety assured: with configurable general fault alarms, and a dedicated alarm for internal sample leakage.

Flexible: with auto validation or calibration options and standard Modbus, 4-20mA, and digital contact outputs.



What does it do?

The Icon Cold Filter Plugging Point (CFPP) analyser provides an indication of the lowest temperature at which a fuel will flow freely through filters in an engine system - an important measurement to determine the limits of fuel operability in colder temperatures and climates.

As a fuel cools it begins to crystallise or 'gel'. The CFPP measurement is the highest temperature at which a fuel fails to pass through a standardized filter, when cooled under specific conditions, and is typically a few degrees above the fuel's pour point.

The Icon CFPP analyser replicates the ASTM D6371 test method, with a measuring bath and cell at its heart. A copper well replicates the "bath", with Icon's advanced cryo-cooling technology allowing for precise control and rapid change of the bath temperature setpoint.

This CFPP analyser is the newest addition to Icon's suite of cold flow property analysers, revolutionising and simplifying a previously unreliable measurement. It can be used to measure the CFPP of various diesels, biodiesel, e-diesel, gas oils, and other blends.

How does it work?

Following the ASTM D6371 test method, the sample is cooled and drawn through a standardised wire mesh filter into a pipette under a controlled vacuum at regular intervals of 1°C below the initial temperature, until the sample flow is stopped or slowed down to the extent that it takes more than 60 seconds to fill the pipette. The CFPP - the temperature at which the last filtration was commenced - is then reported via Analog Output, Modbus (RS-485, TCP/IP), or OPC.

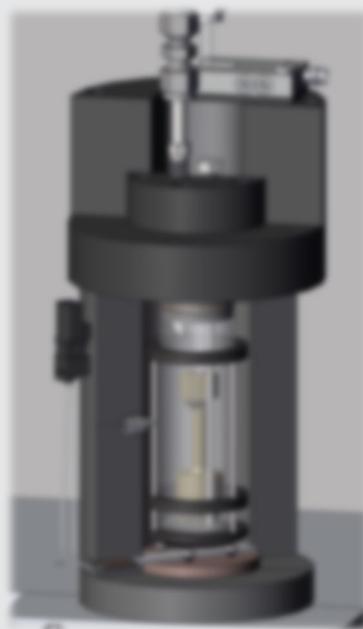
Why choose the Icon Scientific CFPP Analyser?

Outstanding cooling performance: the copper bath is cooled by Icon's advanced cryo-cooling technology, allowing for precise control and rapid change of the bath temperature. The bath is surrounded by a proprietary 3D printed protection sleeve, which provides excellent insulation and prevents ice build-up.

In-built flushing cycle: to prevent paraffin build up on the test filter, every cycle includes a dedicated flushing stage where the sample is heated and backflows through the pipette and filter into the test jar to melt away any paraffin wax formed during the previous test. Excess sample is then pumped away to prevent over-flow or pressure in the test jar.

Continuous optimisation: by measuring CFPP in the process itself, the refinery can reduce the use of expensive additives, and optimise the operating conditions of diesel streams allowing for significant operational savings.

Cloud Point input: providing the CFPP analyser with a live cloud point value allows for further optimisation of the CFPP measurement cycle.



Sample Requirements

Inlet Temperature	Maximum 50°C (122°F)
Inlet Pressure	Minimum 1.0 bar (14.5 psi) Maximum 1.5 bar (22 psi)
Outlet Pressure	Atmospheric.
Liquid Drain	Atmospheric, with continuous fall to sample return point (critical).
Vent	Atmospheric (critical), with continuous fall to sample return point.
Sample Flow (non-continuous)	9 to 12 L/H N.B: Flow only during Flush Typical Consumption 6 L/day
Sample Quality	Filtered to 10 microns (µm). Sample should be 'clear and bright' at room temperature and contain no free water.

Utility Requirements

Instrument Air	Required.
Pressure	Minimum 2 bar (29 psi) Maximum 10 bar (145 psi)
Consumption	Typically 5-10 L/min
Quality	ISO 8573.1 Class 3 ANSI / ISA-7.0.0
Optional extra	If optional electronics enclosure cooling is selected, then supply can be taken from the included vacuum control panel.
Coolant	Potable water, or antifreeze mixture. (Do not use sea water)
Inlet Temperature	Maximum 45°C (113°F)
Inlet Pressure	Minimum approx. 2 bar (29 psi) Maximum 10 bar (145 psi)
Outlet Pressure	Can be returned to pressure, provided minimum flow requirement is achieved.
Flow Rate	Minimum 10 L/H Recommended 18 L/H
Filtration	100 microns (µm)
Viscosity	Maximum 10 cSt
Breather	Must be to atmospheric pressure.
Power	115VAC 50-60Hz, Max 500VA or 230VAC 50-60Hz, Max 500VA

Installation Requirements

Location	Unit must be located out of direct wind sun and rain.
Ambient Temperature	+5 to +40 °C
Ambient Humidity	0-95% RH, non-condensing.

Control System

Control System	Based on fan-less industrial PC with solid state hard drive.
Graphical User Interface (GUI)	17" armoured glass touch-screen. The GUI is used to program the unit and display current and historical analyser results and alarm status.
Language	User-selectable multilingual display.

Certification

Hazardous Area Certification	Exd certified to ATEX, IECEx, UKEx, TIIS, and EACEx standards, suitable for zone 1 or zone 2 use in gas groups IIA, IIB, or IIB+H2, with a variable T-rating depending upon application.
IP Ratings	Tested and certified to IP66/IP67 (dust tight and protected from temporary total immersion in water).

Specification

Measuring Range	-35 to +30 °C (-31 to + 86°F)
Repeatability	Equal to or better than repeatability criteria of the relevant test method.
Cycle Time	Typically 25-90 minutes, dependent on result temperature.

Inputs/Outputs

Analog Outputs	1 x 4-20mA (active) isolated outputs provided as standard for process result.
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Digital (Contact) Inputs	Run / Standby: reads a customer supplied latching switch to toggle between run and standby modes.
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Remote Cal: reads a customer supplied momentary switch to remotely initiate a calibration cycle.

Remote Val: reads a customer supplied momentary switch to remotely initiate a validation cycle.

General Fault Alarms	Alarm limits can be configured for monitored conditions, and set to be Fatal, Warning, or Inactive. Active alarms are notified on screen and stored in the alarm history table.
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Digital (Contact) Outputs	Fatal Alarm (NC): a general fault alarm that causes the analyser to suspend its operation when triggered.
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Warning Alarm (NC): a general fault alarm for notification only.

New Result (NO): a variable-length momentary contact to notify that a new analyser result is available.

Data Valid (NO): indicates that the analyser is currently running on a process stream, and that data is valid. As opposed to when in standby, or when in Cal. or Val. modes.

Cal/Val (NO): indicates that the analyser is currently in Cal/Val mode.

Spill Alarm (NC): an alarm contact that triggers if a leak is detected in the analyser enclosure.

All contact ratings are
24VDC 0.5A, 230VAC 1A

Digital (Signal) Outputs	Calibration Valve: provides a 24VDC signal to an external solenoid valve to switch between process and calibration samples.
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Analog Inputs	Cloud Point input (standard)
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The analyser can read a 4-20mA signal from a Cloud Point analyser to optimise the first CFPP test temperature.

Set of 3x inputs (optional)	The analyser can optionally read up to three 0-10V or 4-20mA active signals. These input values can each have high/low alarm levels associated with them to trigger either of the analyser's general fault alarms.
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Digital (Contact) Inputs	The analyser can optionally monitor up to four volt-free external contacts or customer alarms. These contacts may also be included in the analyser alarm table to trigger the general fault alarms.
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Communications	Modbus RTU or OPC over RS485 or Ethernet (TCP/IP), with optional fiber optics. Optional OPC server software.
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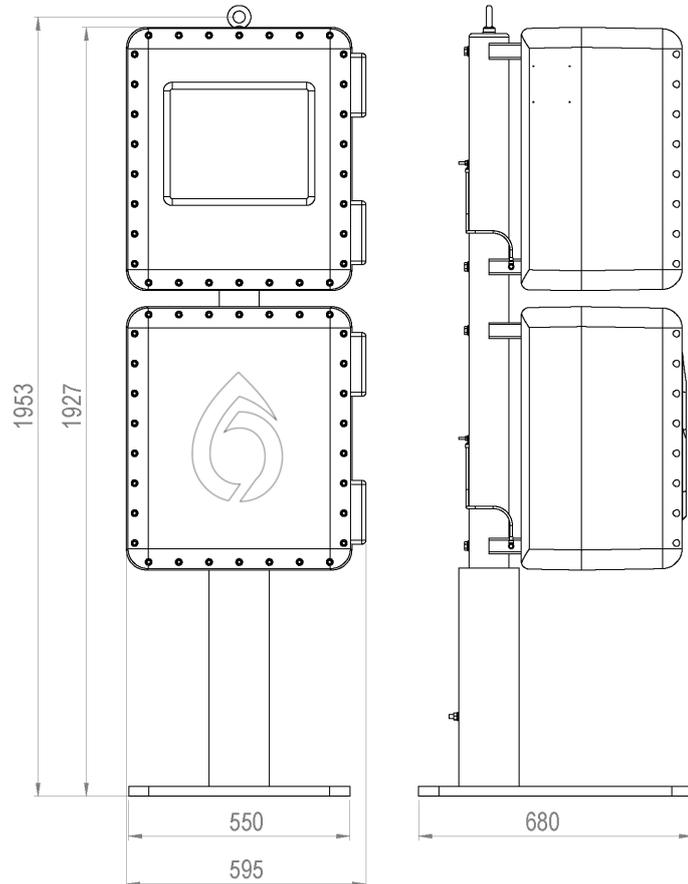
Dimensions & Weights

Notes:

All dimensions in mm

Unpacked weight approx. 414kg

Packed weight approx. 521kg



Note: Icon Scientific products are subject to a program of continuous development and improvement and specifications are liable to change without notice. Please check that you have the latest information available before relying on any specification.