



Co^o Colour Opacity

Powered by Icon

All icon products are...

Easy to use: with an armoured glass wipe-clean touch-screen and intuitive multi-lingual graphic user interface.

Certified to global standards: ATEX, IECEx, TIIS, EAC, 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: no air or inert gas purging required for safe operation in explosion hazard areas.

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



What does it do?

The icon scientific Colour Opacity Analyser uses a dispersive spectrometer module to carry out colour, opacity and concentration measurement. It is designed to overcome the shortcomings of optical filter-based instruments, such as sensitivity losses due to bandpass width and the low transmission characteristics of fixed optical filters. The analyser can measure colour and opacity simultaneously, and can perform concentration measurements based on light absorption at single or multiple wavelengths.

A unique measuring instrument, the analyser is extremely versatile and can be readily re-programmed in the field. It provides accurate measurement on the many petroleum products that have colour as part of their specification. It can be used to duplicate a range of standard visual colour comparison tests dealing with light and dark samples. Delivering exceptional results, the analyser can enable you to measure contamination, purity or the clarity of a liquid. It is particularly good at detecting dye colour and product contamination in pipeline applications.

How does it work?

The analyser uses visible light produced by a 12V 10W tungsten lamp running under reduced voltage to increase its life. Light passes out of the analyser enclosure through an optical window and moves along a fibre-optic cable to an external measuring cell. The light enters the cell through another window fitted with a focusing lens. It then passes through the test sample and out via a further window and fibre-optic cable. It travels back into the enclosure to the dispersive spectrometer module, where the optical transmission or absorbance measurements are carried out. These measurements are fed into a control computer which calculates the final results.

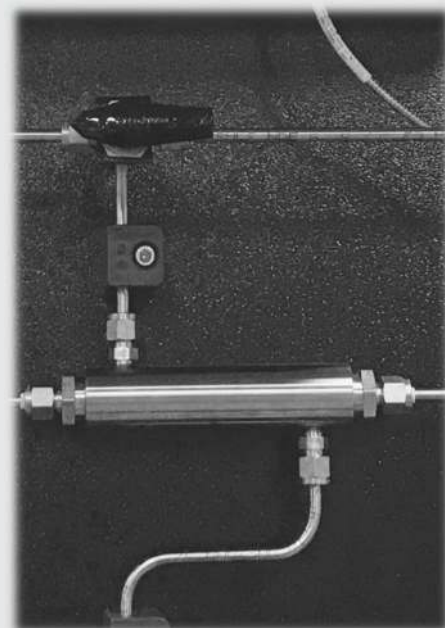
Why choose the icon scientific Colour Analyser?

Fibre optic cables: allows separation of measuring cell and controller if required.

Standard SMA connectors: a range of third-party transmittance and reflectance-measuring cells can be used in addition to the standard icon transmittance cells.

Stability: to compensate for drift and dirt build-up on the cell windows, all measurements are carried out using one or more reference wavelengths.

Dual method analysis: The analyser can perform up to two simultaneous measurements as standard. These could include any combination of colour, opacity, or concentration measurements.



“The icon scientific Colour Opacity Analyser is extremely versatile and may be readily re-application engineered by the user in the field. The use of a solid-state spectrometer module avoids the band pass and transmission loss problems associated with optical filters and moving parts such as filter wheels and chopper motor assemblies”.



Sample Requirements

Sample Filtration Filtration generally not required.

Water Content Free from non-dissolved water. The sample should be clear and bright at the measuring temperature.

Sample Inlet Temperature Maximum 200 °C

Sample Inlet Pressure Maximum 100 barg

Sample Flow 6-30 L/hr

Utility Requirements

Instrument Air Not Required.

Coolant Not Required.

Power 115-230VAC 50-60Hz, Max 75VA

Installation Requirements

Location Unit must be located out of direct wind sun and rain.

Ambient Temperature +5 to +45 °C

Ambient Humidity 0-95% RH, non-condensing.

Remote Flowcell Optionally can be supplied with loose Flowcell and extended fibre optic cables for remote installation in 3rd party sampling system.

Control System

Control System Based on fan-less industrial PC with solid state hard drive.

Graphical User Interface (GUI) 10.5" 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 The Colour analyser is Exd certified to ATEX, IECEx, and EAC standards, suitable for zone 1 or zone 2 use with gas group and T-rating of IIB+H2 T6. It is also ETL listed for the USA and Canada Class 1, Div 1, groups B,C,D.

IP Ratings Tested and certified to IP66/IP67 (dust tight and protected from temporary total immersion in water).

Specification

Measuring Range 0 to 8 ASTM (for D1500)
(output freely adjustable within range) +30 to -16 Saybolt (for D156)

Other – contact icon for details

Measuring Cell Pathlength Standard flowcell pathlengths are:
10mm (ASTM D1500)
100mm (Saybolt D156)

Other – contact icon for details

Repeatability ASTM Colour ≤ 0.2
Saybolt Colour ≤ 1.0

Other – contact icon for details

Cycle Time Continuous output.

Multiple Methods Up to 2 simultaneous measurement methods based on: linear interpolation of calibration curves, user-entered calculations based on absorbance or transmittance at single or multiple wavelengths, opacity measurements.

Light Source 10W tungsten halogen lamp
(lifetime > 7000 hr)

Spectrometer Full range: 360-1100 nm

Inputs/Outputs

Analog Outputs 1 x 4-20mA isolated output (active or passive) is provided as standard.

Optional second output available.

Alarms The analyser provides changeover alarm contacts for the following conditions:

- **Result 1 high/low level alarm**
- **Result 2 high/low level alarm**
- **Spectrometer fault alarm**
- **Bulb fail/low light transmission alarm**
- **Analyser offline** (standby mode)

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

Communications Modbus RTU or OPC over RS485 or Ethernet (TCP/IP), with optional fiber optics. Optional OPC server software.

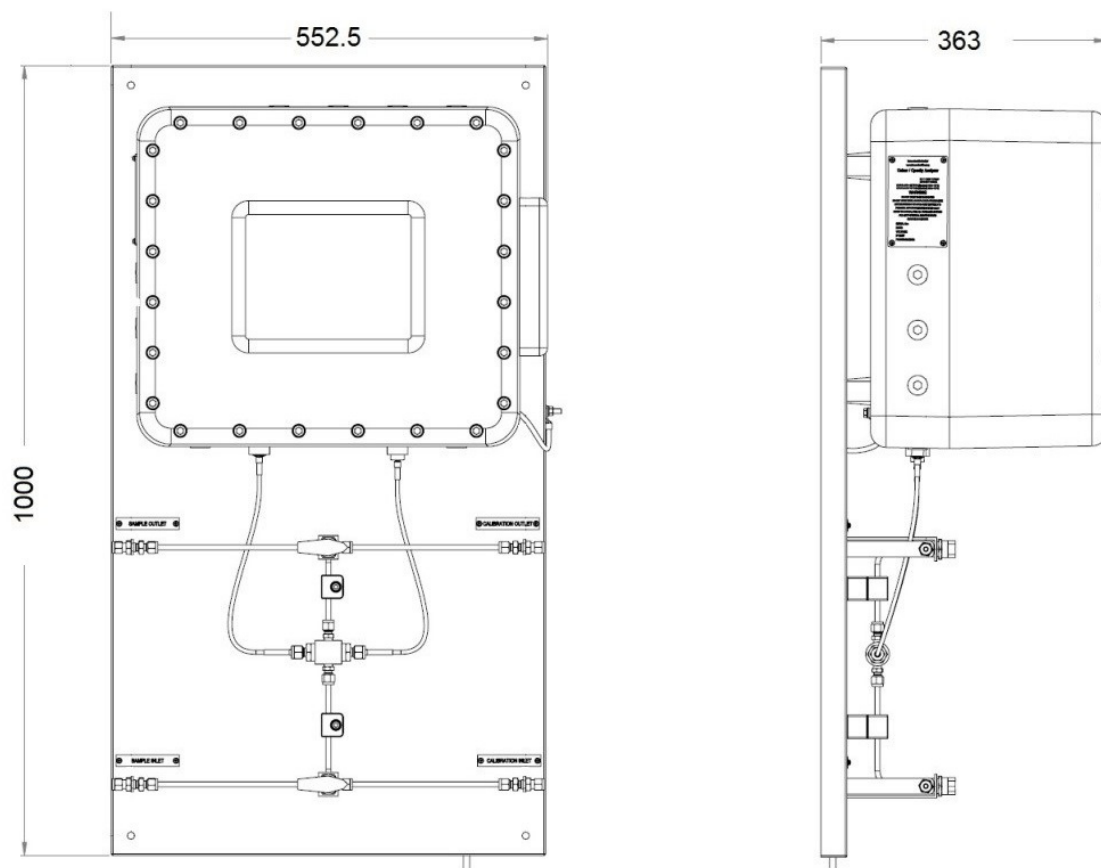
Dimensions & Weights

Notes:

All dimensions in mm

Unpacked weight approx. 103kg

Packed weight approx. 165kg



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.