Colo Science
Laboratory & Scientific Equipment

COLO.SCIENCE · TECHNICAL SPECIFICATION

LIQUID COLOUR WITH MICRO-VOLUME MEASUREMENT FROM 1 ML · D/0 · BLUETOOTH

CS4020

Liquid Spectrophotometer · Transmission d/0 · 360–780 nm · 0–200 % · Ø10 mm · 7" touch screen

CS4020 Liquid Spectrophotometer measures the colour and spectral transmittance of clear and coloured liquids in a cuvette. Besides CIE colour values it reports the liquid colour scales used in specifications and certificates — Pt-Co (APHA / Hazen), Gardner, Saybolt, ASTM D1500, pharmacopoeia colour, EBC and ICUMSA — so one instrument replaces visual comparison with colour standards. The micro-volume holder measures samples from 1 ml, and data can be sent by Bluetooth.

Transmission d/0 · Ø40 mm sphere · Full-spectrum LED · Flat grating + 2 × 40 array · 360–780 nm / 10 nm · 0–200 % transmittance · ΔE*ab 0.01 repeatability · Pt-Co · Gardner · Saybolt · Micro volume from 1 ml · USB + Bluetooth

Document type: **Technical Specification Sheet**
Product: **CS4020 Liquid Spectrophotometer**
Format: Print layout · A4 landscape

CS4020 product page · Spectroscopy & Color — overview · Spectroscopy & Color catalogue · Request quote



CS4020 · benchtop liquid spectrophotometer with cuvette compartment and 7" touch screen

GEOMETRY	RANGE
d/0 transmission	360–780 nm · 0–200 %
REPEATABILITY	**INTER-INSTRUMENT**
ΔE*ab 0.01	ΔE*ab 0.2

MODEL
CS4020

ADDRESS / HQ
Polje ob Sotli 4
SI-3255, Slovenia

CONTACT
sales@colo.si
+386 70 713 437

CS4020 · product overview

Colour and transmittance of liquids — solvents, oils, pharmaceuticals, beverages and chemicals

CORE TECHNOLOGY

Transmission d/0 with Ø40 mm integrating sphere — Ø10 mm aperture, 10 mm and 50 mm cuvettes; micro-volume holder Ø4 mm for samples from 1 ml.

Flat grating and dual 40-element silicon photodiode array — spectral transmittance 360–780 nm with 10 nm interval, range 0–200 %.

Combined full-spectrum LED — stable output over the whole visible range; more than 3 million measurements in 5 years.

Intelligent zero calibration — compensates changes of the measuring environment and keeps results consistent.

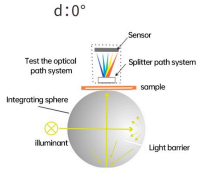
Repeatability ΔE*ab 0.01, inter-instrument agreement ΔE*ab 0.2 — results comparable between instruments and sites.

Liquid colour scales — Pt-Co / APHA / Hazen, Gardner, iron-cobalt, Saybolt, ASTM D1500, pharmacopoeia colour, EBC, ICUMSA, iodine and Klett.

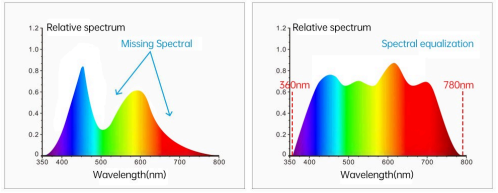
Approx. 0.8 s per measurement — spectrum, colour values, ΔE and pass/fail on the 7" touch screen.

1 000 standards, 10 000 samples, audit trail — USB, serial printer port, Bluetooth; PC software for reports and quality management.

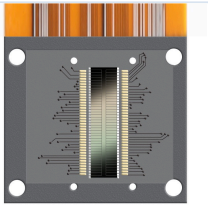
PRODUCT HIGHLIGHTS



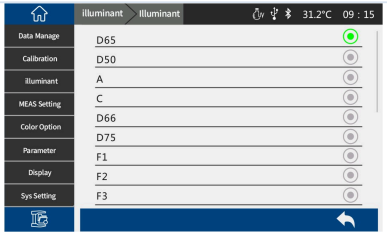
d/0 transmission geometry
Diffuse illumination from a Ø40 mm sphere, 0° viewing through the cuvette.



Full-spectrum LED
Combined LED source covers 360–780 nm without the gaps of a white LED.



Dual 40-element array
Silicon photodiode array for fast and stable spectral measurement.



7" touch screen
Indices, illuminant, tolerances and records set directly on the instrument.

APPLICATIONS



Chemicals, solvents & dyes



Pharmaceutical QC



Beverages, beer & sugar



Clear films & plastics

OBSERVERS	ILLUMINANTS	MEASUREMENT	SAMPLE VOLUME
2° and 10°	41	≈ 0.8 s	from 1 ml

CS4020 · technical parameters

Transmission d/0 · 360–780 nm / 10 nm · 0–200 % · Ø10 mm · 2°/10° observer

TECHNICAL PARAMETERS

Measuring geometry	Transmission d/0 (diffuse illumination, 0° viewing)
Standards	CIE No. 15, ASTM E308, ASTM D1003 / D1044, DIN 5033-7, GB/T 3978, GB 2893, GB/T 18833
Integrating sphere	Ø40 mm
Light source	Combined full-spectrum LED; more than 3 million measurements in 5 years
Spectral separation	Flat grating
Sensor	Silicon photodiode array, dual row of 40 elements
Wavelength range	360–780 nm, 10 nm interval
Transmittance range	0–200 %
Measuring aperture	Transmission Ø10 mm · micro-volume holder Ø4 mm, from 1 ml
Colour spaces	CIE Lab, XYZ, Yxy, LCh, CIE Luv, Munsell, sRGB, Hunter Lab, βxy, DIN Lab99, CMYK (partly via PC software)
Colour difference	ΔE*ab, ΔE*uv, ΔE*94, ΔE*cmc (2:1), ΔE*cmc (1:1), ΔE*00, DIN ΔE99, ΔE Hunter, ΔE*CH
Liquid and other indices	Transmittance, absorbance, APHA / Hazen / Pt-Co, Gardner, iron-cobalt, Saybolt, ASTM D1500, pharmacopoeia colour (Ph. Eur., USP, ChP), EBC (beer), ICUMSA (sugar), Klett, iodine, turbidity, RYBN; WI, YI, TI, metamerism index
Observer	2° and 10°
Illuminants	41 illuminants incl. D65, A, C, D50, D55, D75, F1–F12, CWF, DLF, TL83, TL84, U30, U35 and LED series (via PC software)

Displayed data	Spectrum and values, chromaticity values, colour difference values and graph, chromaticity diagram, colour simulation, pass/fail, colour offset
Measuring time	Approx. 0.8 s (fast mode)
Repeatability	Spectral transmittance: standard deviation within 0.05 % (400–700 nm: within 0.04 %); chromaticity ΔE*ab 0.01 (after warm-up and calibration, measurements at 5 s intervals)
Inter-instrument agreement	ΔE*ab 0.2 (average of 5 standard transmission colour plates)
Calibration	Intelligent zero calibration; transmission black board
Data storage	1 000 standards, 10 000 samples
Audit trail	Supported
Display	7" TFT colour, capacitive touch screen
Interface	USB, serial printer port, Bluetooth
Power supply	24 V DC / 3 A power adapter
Dimensions, weight	370 × 255 × 140 mm (L × W × H), approx. 4.9 kg
Instrument languages	English, Chinese
Environment	Operation 0–40 °C, storage −20–50 °C

CS4020 · delivery, options and series

Standard delivery, options and comparison of the liquid spectrophotometer series

DELIVERY AND SERIES

Standard delivery

Instrument	CS4020 liquid spectrophotometer with 7" touch screen
Cuvettes	10 mm cuvette, 50 mm cuvette
Holders	Transmission test holder assembly, micro-volume holder Ø4 mm
Calibration	Transmission black board
Power and data	Power adapter, data cable; PC quality-management software available for download
Other	User guide

Options

Printer	Micro-printer
Cuvettes	30 mm and 100 mm cuvettes

Liquid spectrophotometer series — which model?

Model	CS4010	CS4020
Repeatability ΔE*ab	0.015	**0.01**
Inter-instrument ΔE*ab	0.25	**0.2**
Micro volume from 1 ml	option	**standard**
Bluetooth	—	✔

Both models: same benchtop body, d/0 transmission with Ø40 mm sphere, full-spectrum LED, 360–780 nm, 0–200 %, the same colour scales and indices, 7" touch screen. CS4010 for routine liquid colour control with standard cuvettes; CS4020 for tighter repeatability, small sample volumes from 1 ml and wireless data transfer.



CS4020 · instrument with 10 mm and 50 mm cuvettes

Typical samples

Solvents, chemicals and resins: Pt-Co / APHA / Hazen and Gardner colour in incoming and release control.

Oils and petroleum products: Saybolt and ASTM D1500 colour of fuels, lubricants and industrial oils.

Pharmaceuticals: colour of solutions by Ph. Eur., USP and ChP colour references.

Food and beverages: beer colour (EBC), sugar solutions (ICUMSA), juices, syrups and edible oils.

CS4020 · configuration and support

Ordering information, configuration checklist and contact

MEASUREMENT WORKFLOW, CONFIGURATION AND SUPPORT



CS4020 · cuvette compartment with micro-volume holder

Ordering information

Model	CS4020 Liquid Spectrophotometer
Geometry	Transmission d/0, aperture Ø10 mm
Interface	USB, serial printer port, Bluetooth
Options	Micro-printer, 30 mm and 100 mm cuvettes

Configuration checklist

Samples: type of liquid, colour depth and available volume — determines cuvette path length or micro-volume holder.

Method: colour scale required by your specification (Pt-Co, Gardner, Saybolt, ASTM D1500, pharmacopoeia, EBC, ICUMSA) or CIE values and ΔE.

Data: illuminant, observer and tolerances you report; data transfer to PC or quality system.

SUPPLIER AND SUPPORT

COLO Lab Experts
Polje ob Sotli 4, SI-3255, Slovenia

Selection guidance: send the type of liquid, the colour scale you report and the available sample volume — we confirm the model, cuvettes and delivery time with the quotation.

QUICK CONTACT

colo.si

sales@colo.si

+386 70 713 437

COLO.SCIENCE · COLOUR MEASUREMENT SUPPORT

Replacing visual colour comparison of liquids?

Send the liquid, the colour scale and the volume you measure — we propose the model and confirm it with the quotation.

Request quotation | sales@colo.si | +386 70 713 437

Specifications are subject to change without notice. Values refer to standard laboratory conditions.