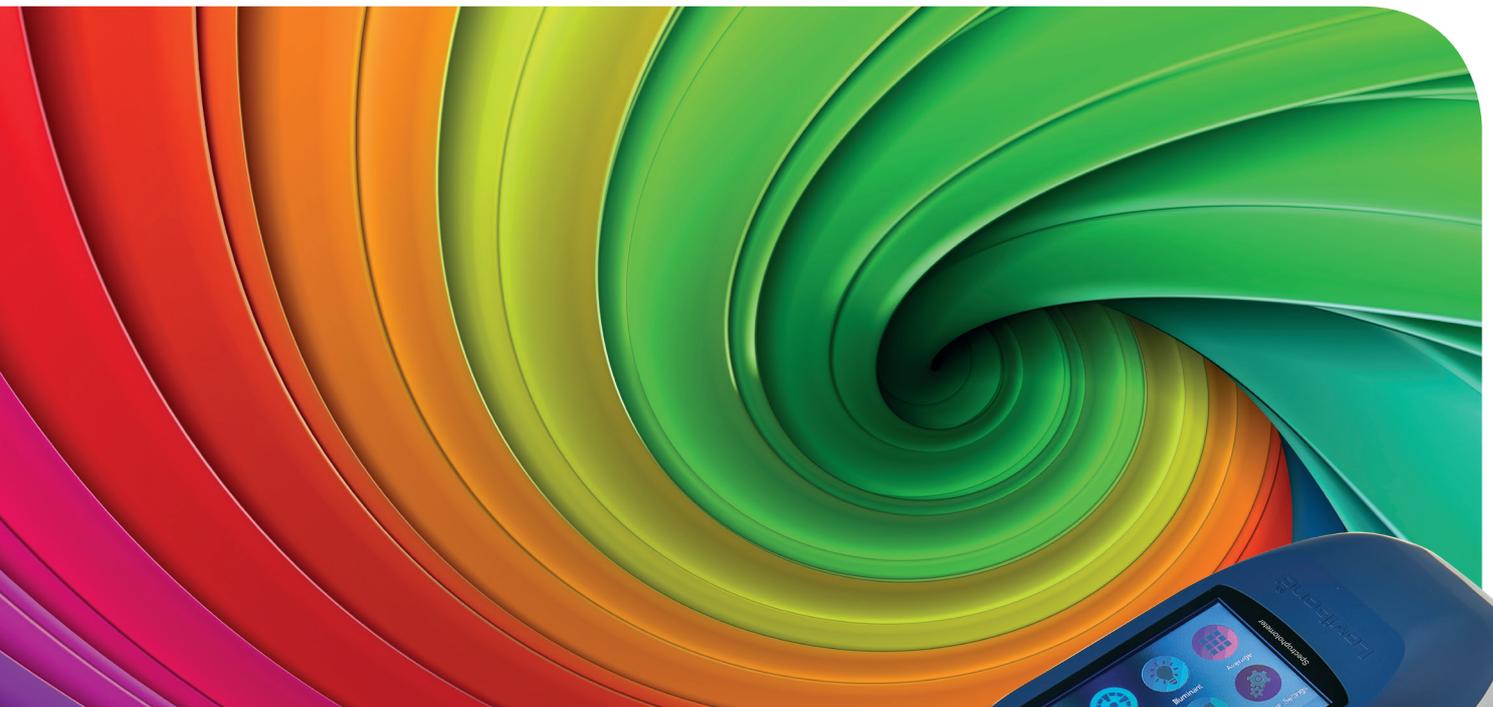


Lovibond® Colour Measurement

Tintometer® Group



TR 520 / 500 Spectrophotometer



- Compact, ergonomic design for comfortable handling and fingertip control
- Intuitive icon-based display for fast and easy operation
- Robust construction for a long life in both production and laboratory environments
- Specially designed accessories for a wide range of materials including powder, liquid, gel, paste, granules and solid material
- On-board camera-based locator makes it easy to see what you are measuring for repeatable, stable results
- Measure large or small area views with easy interchangeability
- Set customised parameters for quality control
- Free OnShade PC-based software which allows graphs, statistical process control, shade searching, all available colour, space, colour differences and indices
- **Bluetooth®** connectivity where available
- Measure fluorescent materials with UV in and UV out
- Multiple language support

Market sectors

Coatings

Food and Beverage

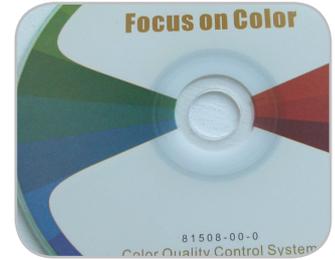
Household Products

Medical and Clinical

Plastics



TR 520 / 500 Accessories



Specially designed accessories for a wide range of materials including powder, liquid, gel, paste, granules and solid material

Specifications	TR 520	TR 500
Optical Geometry	Reflect: di: 8°, de: 8° (diffused illumination, 8 degree viewing angle)	
Integrating Sphere Size	48mm	
Light Source	Combined LED Light, UV Light	Combined LED Light
Spectrophotometric Mode	Concave Grating	
Sensor	256 image Element Double Array CMOS Image Sensor	
Wavelength Range	400-700nm	
Wavelength Interval	10nm	
Semiband Width	10nm	
Measured Reflectance Range	0-200%	
Measuring Aperture	Dual Aperture: 10mm/8mm & 5mm/4mm	Customized Aperture: 8mm/4mm/1x3mm
Specular Component	SCI & SCE	
Colour Space	CIE Lab, XYZ, Yxy, LCh, CIE LUV, Hunter Lab	
Colour Difference Formular	ΔE^*ab , ΔE^*uv , ΔE^*94 , ΔE^*cmc (2:1), ΔE^*cmc (1:1), ΔE^*00v , ΔE (Hunter)	
Other Colorimetric Index	WI (ASTM E313, CIE/ISO, AATCC, Hunter) YI (ASTM D1925, ASTM 313, TI (ASTM E313, CIE/ISO) Metamerism Index MI, Staining Fastness, Colour Fastness, Colour Strength, Opacity	
Observer Angle	2° / 10°	
Illuminant	D65, A, C, D50, D55, D75, F1, F2, F3, F4, F5, F6, F7, F8, F9, F10, F11, F12	D65, A, C, D50, D55, D75, F2, F7, F11
Displayed Data	Spectrogram/Values, Samples Chromaticity Values, Colour Difference Values/Graph, PASS/FAIL Result, Colour Offset	
Measuring Time	2.6s	
Repeatability	MAV/SCI: $\Delta E^* \leq 0.03$	MAV/SCI: $\Delta E^* \leq 0.05$
Inter-Instrument Agreement	MAV/SCI: $\Delta E^* \leq 0.15$	MAV/SCI: $\Delta E^* \leq 0.2$
Measurement Mode	Single Measurement, Average Measurement	
Locating Method	Camera View Finder Locating	
Battery	Li-ion battery. 5000 measurements with 8 hours	
Dimensions	184mm L x 77mm W x 105mm H	
Weight	600g	
Illuminant Life Span	5 years, more than 3 million measurements	
Display	3.5 inch TFT colour LCD, Capacitive Touch Screen	
Data Port	USB, Bluetooth® 4.0	
Data Storage	2000 Standards : 20000 Samples	
Languages	English, French, German, Spanish, Portuguese, Chinese	
Operating Environment	0~40°C, 0~85° Relative Humidity (non condensing), Altitude < 2000m	
Storage Environment	-20~50°C, 0~85° Relative Humidity (non condensing)	
Standard Accessories Included	PC OnShade Software, White & Black Calibration Cavity, Power Adapter, Built-in Li-ion Battery, User Guide	
Optional Accessories	Micro Printer, TR Accessory (for Liquids, Powers and Gels)	

Order No	Product	Order No	Product
403035	TR 520 (8mm and 4mm Aperture)	403042	TR 500 (1 x 3mm Aperture)
403040	TR 500 (8mm Aperture)	403225	TRA 520
403041	TR 500 (4mm Aperture)	403220	TRA 500

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Lovibond® Colour Measurement Tintometer® Group



TR 500 Spectrophotometer

Entry Level Reflectance Meter with Customized Aperture: 8mm/4mm/1x3mm



- Intuitive On-board Icon-based Software
- Easy To Follow On-board Instructions
- Free OnShade PC-based Software for Graphs and Statistical Process Control
- Ergonomic Design for Prolonged Use

Part Number: 403040

Suitable for Use Over Prolonged Periods

The TR 500 has been designed with ergonomic features making it easy to handle during prolonged use.

Latest Technology Facilitates Use

Measurements are further facilitated with touch screen technology and the intuitive on-board icon-based software which guides you to customise your instrument including, but not limited to: select your language option (English, French, German, Spanish, Portuguese or Chinese); chose between right handed or left handed operation; switch light source and colour space. The on-screen interface also guides you through the process of sample measurement and data management.

Enhanced Flexibility

Flexibility is also enhanced with the instrument's choice of customised aperture (8mm/4mm/1 x 3mm) and accessories for most applications including powders, liquids, gels, pastes, granules and solid materials.

Repeatable, Stable Results

To ensure you can easily see what you are measuring for repeatable, stable results, the TR 500 incorporates an on-board camera-based locator.

View Results On-Screen or On PC

As standard, the TR 500 is supplied with a free copy of OnShade software to view the results on a PC (via USB cable) and develop graphs, statistical process control, shade searching and all available Colour, Space, Colour Differences and Indices which can be shared or printed (via the optional micro printer accessory).

Guaranteed Calibration

White and black calibration tiles are, naturally, included with the instrument. It is recommended to re-calibrate every 24 hours minimum.

Suitable for Multiple Applications

The TR 500 reports CIE Lab, XYZ, Yxy, LCh, CIE LUV, Hunter Lab colour spaces, $\Delta E^*L^*a^*b^*$, $\Delta E^*C^*h^\circ$, ΔE^*uv , ΔE^*94 , $\Delta E^*cmc(2:1)$, $\Delta E^*cmc(1:1)$, ΔE^*00 , ΔE Hunter Colour Difference Formulas; and can be set to D65, A, C, D50, D55, D75, F2, F7 & F11 illuminants. In addition, the TR 500 can report a wide selection of other Colorimetric Index's: WI (ASTM E313, CIE/ISO, AATCC, Hunter), YI (ASTM D1925, ASTM 313), TI (ASTM, E313, CIE/ISO), Metamerism Index (MI), Colour stain, Colour Fastness, Colour Strength and Opacity.

This data is displayed as Spectral Value/ Graph, Colorimetric Value, Colour Difference Value/ Graph, PASS/FAIL Result, Colour Offset or Samples Chromaticity values.

TR 500 Spectrophotometer

An entry level yet ergonomic and flexible reflectance spectrophotometer with customised apertures of 8mm/4mm/1 x 3mm. Touch screen technology with intuitive icons to enable user-specific settings and guide through the measurement process. An on-board camera-based locator and black and white calibration plates ensure accurate measurements and results every time. Multi language support for international use.

Technical Data

Colour Type	Opaque
Optical Geometry	Reflect: di: 8°, de: 8° (diffused illumination, 8 degree viewing angle)
Integrating Sphere Size	48 mm
Spectrophotometric Mode	Concave Grating
Sensor	256 image Element Double Array CMOS Image Sensor
Display	3.5 inch TFT colour LCD, Capacitive Touch Screen
Interfaces	USB Bluetooth 4.0
Spectral Interval	10 nm
External Storage	2000 Standards : 20000 Samples
Measurement Mode	Single Measurement, Average Measurement
Power Supply	Li-ion Battery
Battery Life Time	5000 measurements with 8 hours
Location Method	Camera View Finder Locating
Measured Reflectance Range	0 - 200 %
Measurement Time	2.6 s
Measuring Aperture	Customized Aperture: 8mm/4mm & 1x3mm
Specular Component	SCI & SCE
Colour Difference Formular	ΔE^*ab , ΔE^*uv , ΔE^*94 , ΔE^*cmc (2:1), ΔE^*cmc (1:1), ΔE^*00v , ΔE (Hunter)
Other Colorimetric Index	WI (ASTM E313, CIE/ISO, AATCC, Hunter) YI (ASTM D1925, ASTM 313, TI (ASTM E313, CIE/ISO) Metamerism Index MI, Staining Fastness, Colour Fastness, Colour Strength, Opacity
Displayed Data	Spectrogram/Values, Samples Chromaticity Values, Colour Difference Values/Graph, PASS/FAIL Result, Colour Offset
Inter Instrument Agreement	MAV/SCI: $\Delta E^* \leq 0.2$
Spectral Range	400 - 700 nm
Bandwidth	10 nm
Repeatability	MAV/SCI: $\Delta E^* \leq 0.05$
Illuminants	CIE Illuminant D65 CIE Illuminant A CIE Illuminant C CIE Illuminant D50 CIE Illuminant D55 CIE Illuminant D75 CIE Illuminant F1 CIE Illuminant F2 CIE Illuminant F3 CIE Illuminant F4 CIE Illuminant F5 CIE Illuminant F6 CIE Illuminant F7 CIE Illuminant F8 CIE Illuminant F9 CIE Illuminant F10 CIE Illuminant F11 CIE Illuminant F12
Portability	Portable
Illuminant Life Span	5 years, more than 3 million measurements
Observer	2° / 10°
Environmental Conditions	0 - 40 °C, 0 - 85 % Relative Humidity (non condensing), Altitude < 2000 m
Stock Conditions	-20 - 50 °C, 0 - 85 % Relative Humidity (non condensing)
Languages User Interface	English, German, French, Spanish, Portuguese, Chinese
Dimensions	184 x 105 x 77 mm
Weight	600 g

Delivery Scope

- TR 500 Handheld, Sphere Spectrophotometer
 - OnShade PC Software
 - White and Black Calibration Board (white tile and black port)
 - Dust Cover
 - USB Cable
 - External DC Power Supply
 - USB Stick with User Manuals in English, French, German, Spanish, Portuguese and Chinese
 - Sturdy Carrying Case
- Optional Accessory**
- Micro printer (to be purchased separately)

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