



# LIQUID COLOR SPECTROPHOTOMETRY

For those in need of precise liquid color measurement, Torontech offers industry-leading solutions with its advanced liquid colorimeters. Our liquid color spectrophotometers, including the popular ToronSpec™ TT-LC1 and TT-LC2 models, are designed to deliver high precision at an affordable price, making them the ideal choice for a wide range of applications.

These intelligent benchtop units not only provide reliable and accurate measurements but also meet and exceed global standards for color spectroscopy. Whether you require a liquid colorimeter for quality control, research, or production processes, Torontech's TT-LC1 and TT-LC2 models offer the precision and consistency you need. Invest in our liquid color spectrophotometers to ensure your liquid color measurements are always accurate, repeatable, and compliant with the highest industry standards.

## APPLICATIONS

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The Torontech Liquid Color Spectrophotometer series is engineered to replace subjective visual color assessment with high-precision, objective instrumental analysis for transparent liquids. By providing highly repeatable, numerical data across more than 30 industry-specific color scales (including Gardner, Saybolt, APHA/Pt-Co, and Pharmacopoeia), these instruments are a cornerstone of modern quality control, process monitoring, and product development.

This critical color measurement is essential for ensuring quality and consistency in:

- **Petroleum & Petrochemicals:** For the essential quality control and refining process monitoring of fuels, lubricants, and solvents, ensuring products meet stringent specifications such as Saybolt for jet fuel and ASTM D1500 for lubricating oils.
- **Chemical Manufacturing:** To control the purity and guarantee the batch-to-batch consistency of resins, solvents, and polymers by precisely measuring color on standardized scales like Gardner and APHA/Pt-Co, which are direct indicators of product quality and degradation.

- **Edible Oils & Fats:** To perform critical color grading of products like palm oil, coconut oil, and tallow, where the integrated heating function (up to 90°C) is essential for melting the samples to a consistent liquid state for accurate analysis of quality and refining levels.
- **Pharmaceuticals:** As a vital QC tool to ensure the purity, stability, and consistency of liquid drug products, Active Pharmaceutical Ingredients (APIs), and excipients, with full compliance to global Pharmacopoeia color standards.

## FEATURES

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### Ultra-wide wavelength range 360-780nm

Liquid Color Spectrophotometer

The instrument features an ultra-wide wavelength range of 360-780nm, which exceeds the spectral range of the human eye, thereby extending its measurement capabilities.

### More than 30 chroma indicators

Liquid Color Spectrophotometer

The instrument comes equipped with built-in indicators like Platinum Cobalt, Gardner, Saybolt, U.S. Pharmacopoeia, and European Pharmacopoeia chroma, among others. This makes it ideal for use in various industries, including liquid chemicals, coatings, pharmaceuticals, cosmetics, petroleum, industrial oils, and more.

## **Intelligent zero calibration technology is used to ensure data stability of 0.01**

Liquid Color Spectrophotometer

Thanks to intelligent zero calibration technology, the measurement results remain stable with a repeatability of 0.01, even when environmental conditions change.

## **Minimum sample request reduced to 1ml**

Liquid Color Spectrophotometer

With an advanced optical design and precise control of light transmission, the minimum liquid requirement is reduced to just 1ml, 34% less than the previous generation, helping customers save on expensive samples. The spectrophotometer is compatible with standard cuvettes, so there's no need for additional purchases or custom cuvettes.

## **The PTC heating module produces a constant temperature of up to 90°C**

Liquid Color Spectrophotometer

This instrument is ideal for measuring samples that easily solidify, such as fats and waxes. It can be heated up to 90°C and maintained at that temperature, allowing the sample to remain in a liquid state for testing.

## **Support OTA online upgrade to update chroma indicators and new functions at any time**

Liquid Color Spectrophotometer

The instrument supports online software updates, allowing users to add new measurement indicators. Users can easily upgrade and automatically receive these updates.

7 inch touch screen operation, clear display of measurement data

Liquid Color Spectrophotometer

The instrument features a 7-inch touchscreen, supporting both standalone and computer operation. It can store over 100,000 data points.

TECHNICAL SPECIFICATIONS

| Model classification       |                                                                |                                                                |
|----------------------------|----------------------------------------------------------------|----------------------------------------------------------------|
|                            | Liquid Color Spectrophotometry<br><br><b>ToronSpec™ TT-LC1</b> | Liquid Color Spectrophotometry<br><br><b>ToronSpec™ TT-LC2</b> |
| Repeatability*             | $\Delta E^*_{ab} \leq 0.015$                                   | $\Delta E^*_{ab} \leq 0.01$                                    |
| Inter instrument agreement | $\Delta E^*_{ab} \leq 0.25$                                    | $\Delta E^*_{ab} \leq 0.2$                                     |
| Heating function           | /                                                              | Yes                                                            |

| Model classification      |   |                                  |
|---------------------------|---|----------------------------------|
| Heating temperature range | / | From ambient temperature to 90°C |



**Torontech Inc.**

251 Consumers Road, Suite 1200  
Toronto, Ontario, M2J 4R3, Canada 

Phone: +1 416 368 2721 | Fax: +1 416 981 7652  
Email: [info@torontech.com](mailto:info@torontech.com)

**Torontech, LLC**

601 Brickell Key Drive, Suite 700  
Miami, FL 33131, USA 

Toll-Free: 1-866-383-7919  
Email: [sales@torontech.com](mailto:sales@torontech.com)

**Torontech ME FZE**

Meydan Grandstand, 6th Floor,  
Meydan Road, Nad Al Sheba,  
Dubai-261440, UAE 

Phone: +971 488 19252  
Email: [me@torontech.com](mailto:me@torontech.com)

