



TOMATO AND TOMATO PRODUCTS HIGH-PRECISION SPECTROPHOTOMETER YS4582

- Multi-form measurement: Fresh fruit / paste / liquid
- Deep customization: Color / quality index detection
- High precision: Professional-grade spectrophotometric technology

**(Dedicated for
Tomato Color)**



Spectrophotometer YS4582

The spectrophotometer YS4582 is a high-precision color measurement device deeply customized for the color and quality index detection of tomatoes and tomato products. It adopts a 45° annular uniform illumination and 0° reception (45/0) classic optical geometry, strictly conforming to CIE, ISO, ASTM, DIN and multiple national standards. Equipped with a concave grating spectrophotometric system and a 256-pixel dual-array CMOS image sensor, it achieves precise spectral acquisition and color analysis across the entire visible light band.

DEDICATED TO TOMATO COLOR MEASUREMENT

Spectrophotometer YS4582 accurately detects chromaticity and lycopene index of all types of tomato products including tomato paste, tomato sauce, tomato juice, etc.

PRODUCT INTRODUCTION

The spectrophotometer YS4582 is a high-precision color measurement device deeply customized for the color and quality index detection of tomatoes and tomato products. Featuring a $\Phi 20$ mm aperture, it is particularly suitable for tomato color measurement, including tomato paste scoring, tomato sauce scoring, tomato seasoning sauce scoring, tomato juice scoring, fresh tomato color index, lycopene index, and other indicators.

The device adopts the classic 45° annular uniform illumination and 0° reception (45/0) optical geometry, strictly conforming to CIE, ISO, ASTM, DIN and multiple national standards. Equipped with a concave grating spectrophotometric system and a 256-pixel dual-array CMOS image sensor, it achieves precise spectral acquisition and color analysis across the entire visible light band.

FEATURE HIGHLIGHTS

I. Tailored for Tomato Detection, Covering the Entire Industry Chain

Specialized Measurement Aperture: The $\Phi 20$ mm large aperture perfectly fits the measurement needs of different tomato sample forms such as fresh tomato fruit, paste, and juice, greatly reducing measurement errors caused by sample non-uniformity and ensuring data stability and representativeness.

Full-Dimension Tomato Quality Indicators: In addition to conventional color spaces and color difference calculations, the instrument has built-in tomato-specific colorimetric indicators, directly outputting core parameters such as spectral reflectance, a/b ratio, TPS, TSS, TCS, TJS, FTCl, and Lycopene index, meeting the quality rating and testing needs of the entire tomato industry chain from cultivation and harvesting to processing production and laboratory R&D.

YS4582 — Meets quality indicator testing for all tomato production stages



Tomato cultivation and harvesting



Tomato processing and production



Tomato laboratory R&D



Deep Adaptation to Industry Scoring Systems: It matches the industry scoring standards of mainstream tomato products such as tomato paste, tomato sauce, tomato seasoning sauce, and tomato juice, providing standardized data support for product quality grading and batch consistency control.

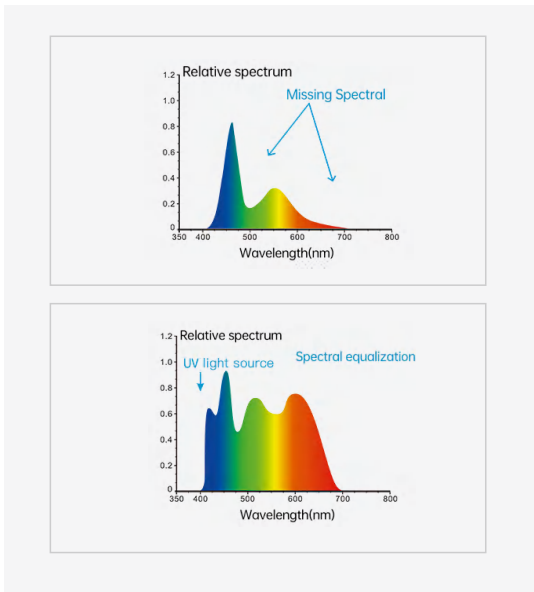
a/b: 4.39
TPS: 71.89
TSS: 50.18
TCS: ---
TJS: 55.63
FTCl: 44.03
Lycopene: 1041.00



II. Laboratory-Grade High Precision, Ensuring Reliable Data

FROM FRESH TOMATOES TO DEEP PROCESSING. COLOR DIFFERENCE AND QUALITY — ALL IN ONE INSTRUMENT.

Every batch of tomato products has reliable color data to rely on.



Extreme Repeatability: After warm-up and calibration, measuring a standard white plate 30 times at 5-second intervals gives a color value repeatability ΔE^*ab within 0.04; the spectral reflectance standard deviation is controlled within 0.1% (within 0.2% for the 400–700 nm band), perfectly suited for high-precision laboratory analysis and micro color difference identification.



Excellent Inter-Instrument Agreement: The average value of measurements on 12 BCRA Series II standard color tiles gives an inter-instrument agreement ΔE^*ab within 0.2, ensuring consistent color data transfer and alignment across multiple devices, laboratories, and production sites, achieving standardized cross-regional quality control.



Full-Band Accurate Acquisition: The measurement wavelength range covers the full visible band 400–700 nm, wavelength interval 10 nm, half-bandwidth 10 nm, reflectance range 0–200%, achieving accurate capture of sample spectral information without blind spots.

III. Professional Optical System Design, Adapting to Diverse Measurement Scenarios

1 Mature Spectrophotometric Technology



It uses a concave grating spectrophotometric method combined with a 256-pixel dual-array CMOS image sensor, achieving high-speed and high-sensitivity acquisition of spectral signals, ensuring high-fidelity measurement results.

2 Dual Light Source Configuration




Equipped with a combined LED light source and UV light source, it can not only measure conventional samples but also accurately detect fluorescent samples, greatly expanding the application boundaries of the device.

3 Standard 45/0 Optical Geometry








The 45° annular uniform illumination and 0° reception design perfectly matches human visual characteristics, effectively avoiding the influence of sample surface texture and gloss on measurement results. The measured data is highly consistent with visual evaluation, especially suitable for color testing of food and textured samples.

IV. Efficient and Convenient Operation & Data Management, Adapting to Industrial Applications



Full-Platform Software Compatibility

Supports Android, iOS, Windows, WeChat Mini Program, and HarmonyOS. The supporting professional quality control software enables in-depth data analysis, batch management, remote transmission, and report export, facilitating the establishment of a digital color management system.

Fast Measurement: A single measurement takes only about 1.5 seconds. It supports single measurement and average measurement modes (2–99 times), enabling rapid batch sampling or full inspection, greatly improving testing efficiency on production lines and in laboratories.

Intuitive Visual Operation: Equipped with a 3.5-inch TFT true-color capacitive touchscreen, it can directly display spectral graph/data, sample color values, color difference values/graph, pass/fail results, and color deviation, allowing intuitive interpretation of results without external devices.

Large Storage Capacity: It can store 1000 standard sample data and 30,000 test sample data, fully meeting the data storage and traceability needs of large-scale industrial production.

Multi-Language Support: Built-in languages include Simplified Chinese, English, Traditional Chinese, Russian, Italian, German, Portuguese, Spanish, French, and more, adapting to global application scenarios.

V. High Durability and Strong Environmental Adaptability, Stable Under Complex Conditions



Long Battery Life & Light Source Lifespan: Built-in high-capacity lithium battery supports up to 5000 measurements in 8 hours on a full charge, fully meeting the needs of outdoor and mobile production line testing. The illumination light source has a lifespan of 5 years or >3 million measurements, greatly reducing equipment maintenance costs.

Broad Environmental Adaptability: Operating temperature range 0–40°C, humidity 0–85% RH (non-condensing), altitude below 2000 m, suitable for most production and testing scenarios. Storage temperature range –20 to 50°C, ensuring safe storage when not in use.

Compact Portable Design: Handheld design flexibly adapts to laboratory fixed testing, production line random sampling, and on-site field testing.

OPTIONAL ACCESSORIES

Product Name	Material Code	Image	Function
Powder test cell	2.006.01.0093		Convenient for powder sample measurement
Micro printer	1.609.01.0020		Portable, allowing you to print various measurement parameters without connecting to a computer
Universal test kit	2.006.01.0094		Convenient for measuring liquid and paste samples
Positioning plate	/		Precisely locate the sample measurement area

TECHNICAL SPECIFICATIONS

Product Model	YS4582
Illumination Geometry	45/0 (45° annular uniform illumination, 0° reception);
Compliant Standard	Compliant with CIE No.15, GB/T 3978, GB 2893, GB/T 18833, ISO 7724-1, ASTM E1164, DIN 5033 Teil 7
Integrating Sphere Size	Φ48mm
Light Source	Combined LED light source, UV light source
Spectrophotometry Method	Concave grating
Sensor	256-pixel dual-array CMOS image sensor
Measurement Wavelength Range	400-700nm
Wavelength Interval	10nm
Reflectance Range	0~200%
Measurement Aperture	Φ20mm
Color Spaces	CIELAB,XYZ,Yxy,LCh,CIELUV,s-RGB,HunterLab,βxy,DINLab99、Munsell(C/2)
Color Difference Formulas	$\Delta E^*ab, \Delta E^*uv, \Delta E^*94, \Delta E^*cmc(2:1), \Delta E^*cmc(1:1), \Delta E^*00, \text{DIN}\Delta E99, \Delta E(\text{Hunter})$
Other Colorimetric Indices	Spectral reflectance, a/b ratio, TPS, TSS, TCS, TJS, FTCl, Lycopene
Observer Angle	2°/10°
Observation Light Sources	D65, A, C, D50, D55, D75, F1, F2, F3, F4, F5, F6, F7, F8, F9, F10, F11, F12, CWF, DLF, TL83, TL84, TPL5, U30, B, U35, NBF, ID50, ID65, LED-B1, LED-B2, LED-B3, LED-B4, LED-B5, LED-BH1, LED-RGB1, LED-V1, LED-V2, LED-C2, LED-C3, LED-C5 (41 light sources in total, some via PC software)
Display	Spectral graph/data, sample colorimetric values, color difference values/graph, pass/fail results, color deviation
Measurement Time	Approx. 1.5 s
Repeatability	Spectral reflectance: standard deviation $\leq 0.1\%$ ($\leq 0.2\%$ within 400-700 nm); Colorimetric values: $\Delta E_{ab} \leq 0.04$ (after warm-up and calibration, 30 measurements of white plate at 5 s intervals)
Inter-Instrument Agreement	$\Delta E_{ab} \leq 0.2$ (average of measurements on BCRA Series II 12 color tiles)
Measurement Modes	Single measurement, average measurement (2-99 times)
Dimensions	LxWxH = 184x77x105 mm
Weight	Approx. 600 g
Battery	Lithium battery, 5000 measurements within 8 hours
Light Source Lifespan	5 years or >3 million measurements
Display	TFT true color 3.5-inch capacitive touchscreen
Interfaces	USB, Bluetooth.
Data Storage	1000 standard samples, 30,000 test samples
Software Support	Android, iOS, Windows, WeChat Mini Program, HarmonyOS
Language	Simplified Chinese, English, Traditional Chinese, Russian, Italian, German, Portuguese, Spanish, French
Operating Temperature Range	0-40°C, 0-85% RH (non-condensing), altitude below 2000 m
Storage Temperature Range	-20 to 50°C, 0-85% RH (non-condensing)
Standard Accessories	Power adapter, data cable, built-in lithium battery, user manual, quality management software (http://www.3nh.com/en/client_en_14.html), black/white calibration box, protective cover
Optional Accessories	Micro printer, powder test cell, universal test kit, positioning plate

GUANGDONG THREENH TECHNOLOGY CO., LTD.



Spectrophotometers



Colorimeters



Haze Meters



Gloss Meters



Test Charts



Light Booths

★ CONTACT US



web:www.3nh.com



Email:3nh@3nh.com



Tel:0086-020-82880288



Add: 6-8th floors, Building B33, Low Carbon Headquarters Park, Xincheng Road No.400, Zengcheng District, Guangzhou, Guangdong Province, China