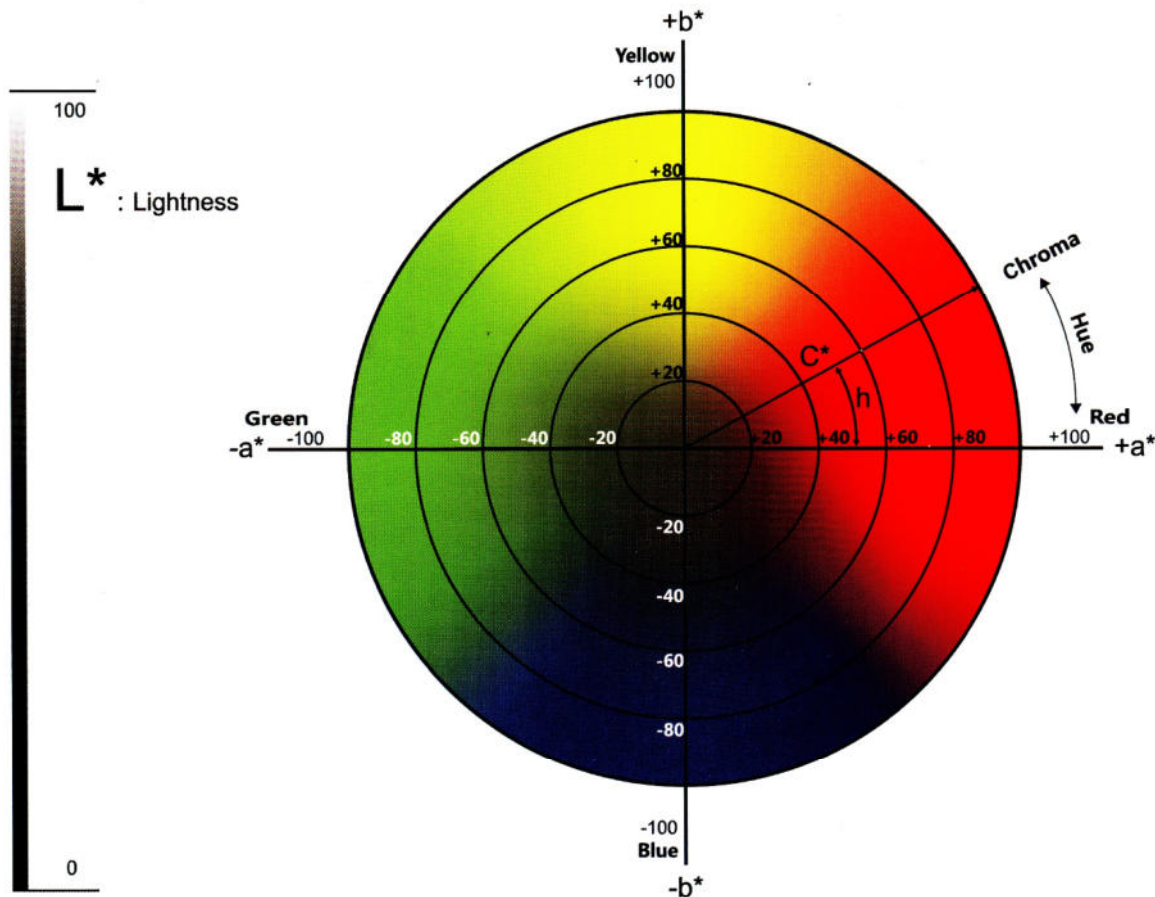


## LAB Color Space



## About Us

Hangzhou CHNSpec Technology Co., Ltd is the leader in the color, haze and gloss measurement field and we are mainly engaged in the researching, producing and sales of color, haze and gloss measurement equipment which includes colorimeters, portable and bench-top spectrophotometers, gloss meters and haze meters. Our products have been widely used in the fields of plastic, printing, paint, auto parts, metals, household appliances and scientific research institution.

All company supervisors are with senior professional post and doctor degree, 80% of the R & D team is with master degree and all other staffs are with bachelor degree. We have close cooperation with many authoritative scientific institutions such as state key laboratory of crucial discipline for color science and project, state key laboratory of modern optical instruments, National Projects Center of Test and Measurement Technology in Ministry of Education and the UK's National Physical Laboratory (NPL) and University of Leeds (Color Sub Commission of CIE). Our technology level and researching ability makes rapid progress and remarkable achievement.

Till September of 2021, Hangzhou CHNSpec Technology has received 11 invention patents, 8 patents of utility model, 7 design patents, 3 software copyright patents and one American Invention Patent. In addition there are more than 10 invention patents in the announcement state. We have published more than 20 papers which more than 10 papers are in SCI and EI and others are in the national first grade journal of Science & Research.

# Product information



## Computer Color Matching Software

- It can provide several formulas and user can choose the formula according to cost and stock
- Color and formula can be saved into data, saves labor cost and guarantees production stability
- Simple operation and quick to get started
- Electronic sample data and formula data
- Waste and old materials can be used which saves a lot of cost
- Precise formula and high efficiency



## DataChroma® Image Spectrophotometer

- Almost all colors can be measured
- Maximum measurement repeatability  $dE_{abs} \leq 0.01$
- The color and reflectance of each point in the whole image can be obtained
- Ensure the consistency with the data of the traditional spectrophotometer



## High Accuracy Bench-top Spectrophotometer CS-826

- Auto calibration
- High stability UV light source, providing stable fluorescence measurement result
- Excellent repeatability when measuring on black samples
- Excellent consistency with other competing products made in United States, Japan and Europe
- Excellent long-term repeatability, even after rapid changes in the environment can still guarantee excellent repeatability



## High Repeatability Bench-top Spectrophotometer CS-821N

- Auto calibration
- Excellent long-term repeatability, ensure excellent measurement repeatability even after environment changes
- It has two lamps: pulsed xenon and LED
- 24 kinds of illuminants and more than 40 measurement indices
- Temperature and humidity compensation function
- Seven-inch touch screen, Android operate system
- Dual optical paths spectrum analysis technology
- Support SCI+SCE simultaneous rapid measurement



## Bench-top Spectrophotometer CS-820N

- Inter-Instrument Agreement:  $dE < 0.15$  (XLAV aperture)
- 24 standard light sources, 40 measurement standards
- reflectance and transmittance measurement
- Simultaneous SCI/SCE measurement
- Provide Pulse Xenon and LED Two Kinds of Light Sources
- Temperature and Humidity Auto Compensation Function
- Double optical path spectrum analysis technology



## Transmittance Spectrophotometer CS-810

- Glass and Liquid Color Measurement
- Adopt UV-enhanced Silicon Photodiode Transmittance measure range improved from 0-100% to 0-200%
- Pt-Co, Gardner, ASTM color, Say bolt



## Spectrophotometer DS-700D

- Excellent repeatability and inter-instrument agreement
- Intelligent auto calibration
- It can pass metrology of level I
- 360-700nm Full Wavelength Balanced LED+UV
- Dual optical path array sensor
- 10nm Resolution Grating Spectroscopy Technology
- Three aperture as standard accessories
- It supports Android, IOS and Windows program.



## Portable Spectrophotometer CS-580/600/650/660

- SCS optical engine
- Camera viewfinder
- Full band light source
- Pantone Color Number Matching
- Support 400nm-700nm/360nm-740nm
- Support connecting computer color matching software



## 45/0 Spectrophotometer CS-600C/600CG

- Instrument adopts 45/0 geometry
- Compatible with 60 Degree Gloss Measurement (CS-600CG)
- Comply with International Measurement Standards
- Color QC Software
- 360 degree improvement of customer experience



## Three Angles Color Spectrophotometer CS-390/392

- It is designed to measure color value and surface graininess evaluation
- Adopt steady and long lifetime LED light source
- Measure at angles of 15 degree, 45 degree, 110 degree
- Conform to ASTM D2244, E308, E11642194, DIN 50335063, 6174, 61752, DIN EN ISO 11664S07724, SAE J1545 standards



## Spectral Colorimeter CS-410/420 Series

- Auto calibration
- Good repeatability for stable measurement—0.06
- Camera viewfinder (CS-420)
- Guarantee to pass the national metrology
- Carry-on Mass Color Card Database
- Can provide SCI/SCE measurements
- Include UV light source
- 24 standard light sources, 30+ measurement standards



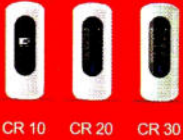
### ColorMeter SE/Pro/Max

- Adopt D/8(Diffused Illumination, 8 degree viewing) geometry and SCI to make measurement more accurate
- Adopt spectral sensor to provide reflectance data which make its performance much better than colorimeter
- Single machine or connected to the APP/PC can measure, and display the measurement results direct
- Find similar color, support customer to upload their own color information
- Auto black and white calibration
- Android, ios, Windows (Pro,Max)



### Whiteness meter WSB-0/1/2

- To measure 9 whiteness indexes such us R457/ISO2470
- Accurate—can pass the national metrological certification
- Simple—Auto calibration,One key measurement
- Advanced ceramic whiteboard,Lightness >90
- Support App and PC software



### Colorimeter CR10/20/30

- Simple—Auto calibration,One key measurement
- Support single machine or mobile phone measurement
- 45 / 0 structure using composite human eyes to evaluate color
- Support App and PC software



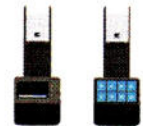
### Clarity and Haze Meter CS-720

- Different measurement parameters and professional clarity measurement function
- Comply with ASTM and ISO standards
- Compensation Measurement to Make Test Result More Accurate
- Open Sample Measurement Area, Sample can be Measured Horizontally or Vertically
- Comprehensive Transmission Color Parameters
- Different Light Sources for Different Measurement Standards
- Seven-inch Android Touch Screen for Better User Experience
- Abundant Measurement Fixtures
- Haze QC software as Standard Accessory



### Color and Haze Meter CS-700

- Compliance with US (ASTM) and International (ISO) standards
- Three kinds of light sources A, C and D65 for haze and total transmittance measurement
- Spectral haze measurement obtains more than 20 kinds of measurement data such as color, haze, transmittance, yellowness and whiteness in one measurement
- No need to do warm-up,after instrumenr is calibrated,it can be used
- 24 kinds of illuminants for transmission color measurement



### Haze Meter

- Small size and light weight which makes it much easier to carry
- Unique signal processing technology to ensure the test result is not affected by external light
- 7-inch touch screen, Android operating system
- Three kinds of light sources A, C and D65 for haze and total transmittance measurement
- It adopts LED light source whose lifetime can reach 10 years
- Compliance with US (ASTM) and International (ISO) standards



### CS-300/380/300S

- High Stability
- Large Battery Capacity for 50000 continuous tests
- Good Feeling



### Gloss Meter DG60 Series

- Small — Only 80g weight, size as small as name card
- Fast — Single measure time less than 1S
- Long — Continuous measure 10,000 times after rechargeable
- Accurate — Pass national metrology
- Auto Calibration



### Non-contact color sensor CRX-50/51/52

- Auto calibration
- Three measurement structures:45/0,D/8,Three angles
- Instrument to sample distance 7.5cm
- Full wavelength balanced LED light source
- Ultra fast measurement with interval only 20ms



### Hyperspectral Camera FigSpec FS Series

- Machine vision, color measurement, visible light / near-infrared detection hyperspectral solution
- Spectral range:400-700nm / 400-1000nm, spectral sampling/pixel 2.5nm, up to 1.5nm
- Imaging speed: Full Spectral range 128Hz,3300Hz after ROI
- Color difference test : print, textile and other industries surface color test, texture detection, with special light source and control system, the repeatability of single pixel of color measurement can reach dE\*ab<0.1
- Support multi-region ROI

# Instrument Recommend

Instruments				DC-1000series	CS-826 CS-821N CS-820N	CS-810	Portable Spectrophotometer			Spectral Colorimeter	Colorimeter
				Samples	CS-390 CS-392	CS-650 CS-520 DS-700series	Others	Spectral Colorimeter	Colorimeter		
Granule	Master Batches	Sand	Plastic chip	★	★	☆	★	★	★	☆	☆
				★	★	☆	★	★	☆	☆	
				★	★	☆	☆	☆	☆	☆	
	Sugar	Rice Grain	.....	★	★	☆	☆	☆	☆	☆	☆
Powder	Titanium Powder	Talcum Powder	Calcium Carbonate	★	★	☆	★	★	★	★	★
				★	★	☆	★	★	☆	☆	
				★	★	☆	☆	☆	☆	☆	
	Iron Oxide	Flour	.....	★	★	☆	☆	☆	☆	☆	
Pasty Material	Tomato Sauce	Yogurt	Toothpaste	★	★	☆	★	★	★	★	★
				★	★	☆	★	★	★	★	
				★	★	☆	★	★	☆	☆	
	Ointment	Juice Powder	.....	★	★	☆	☆	☆	☆	☆	
Transparent Materials	Glass	Thin Film		★	★	★	☆	☆	☆	☆	☆
				★	★	★	☆	☆	☆	☆	
				★	★	★	☆	☆	☆	☆	
	Solvent	Drinking & Beverage	.....	★	★	★	☆	☆	☆	☆	
Fluorescence Material	Fluorescent cosmetics	Fluorescent textiles		★	★	☆	☆	★	☆	★	☆
				★	★	☆	☆	★	☆	★	
				★	★	☆	☆	★	☆	☆	
	Fluorescent label	Fluorescent road signs	.....	★	★	☆	☆	★	☆	☆	
Flat Surface Material	Textile	Plastic Profile	Anodic oxidation	★	★	☆	☆	★	★	★	★
				★	★	☆	☆	★	★	★	
				★	★	☆	☆	★	★	★	
	Paint & Coating	Plates	Electro-plating	.....	★	★	☆	☆	★	☆	
Car Paint and Effective Materials		Car Paint		☆	☆	☆	★	☆	☆	☆	☆
				☆	☆	☆	★	☆	☆	☆	
				☆	☆	☆	★	☆	☆	☆	
	Laser Paper	Mobile Phone Case	.....	☆	☆	☆	★	☆	☆	☆	
Curved Materials	Earphone	Zipper	Nail Polish	★	★	☆	☆	★	☆	☆	☆
				★	★	☆	☆	★	☆	☆	
				★	★	☆	☆	★	☆	☆	
	Tooth	Button	.....	★	★	☆	☆	☆	☆	☆	
Complex color	Rock color paint	Textile		★	☆	☆	☆	☆	☆	☆	☆
				★	☆	☆	☆	☆	☆	☆	
				★	☆	☆	☆	☆	☆	☆	
	Printed matter	Small object	.....	★	☆	☆	☆	☆	☆	☆	

## Color difference evaluation standard

ΔE Value Reference	Color Difference(Tolerance) / Acceptable	ΔE Value Reference	Color Difference(Tolerance) / Acceptable
0-0.2	Tiny or no, perfectly matched	1.0-2.0	Medium, acceptable for specific industry
0.2-0.5	Small, acceptable	2.0-4.0	Large, acceptable for specific industry
0.5-1.0	Small to Medium, acceptable for some industries	> 4.0	Very large, unacceptable for most industries