



DS-36D  
DS-37D  
DS-39D

## Benchtop spectrophotometer

Excellent inter- instrument agreement  
and repeatability



Design of dual optical path based on differential spectroscopy engine and 1nm grating

Automatic calibration technology to ensure long-term consistency of fluorescence measurements

Ultra-high accuracy and excellent inter-Instrument agreement guaranteed

# Benchtop spectrophotometer

## DS-36D | DS-37D | DS-39D

There are three models available:

DS-36D: Repeatability 0.01, Inter-Instrument Agreement 0.18

DS-37D: Repeatability 0.005, Inter-Instrument Agreement 0.12

DS-39D: Repeatability 0.005, Inter-Instrument Agreement 0.08

- Equipped with two types of lighting sources: pulse xenon lamp and LED
- 37 standard light sources, 40+ measurement indicators
- Automatic recognition of four apertures switching
- Temperature and humidity calculation compensation function
- 7-inch touch screen, Android operating system

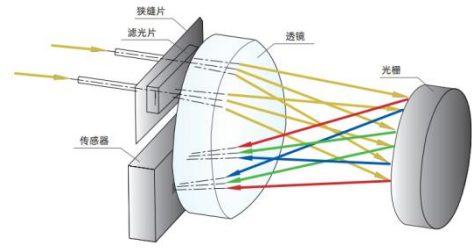


- Provide powerful ColorExpert computer data management software
- Can save data to the cloud and follow the account to prevent loss
- Support PC end export or printing of data test reports
- Support color matching software to provide more formula inspiration and improve color matching efficiency

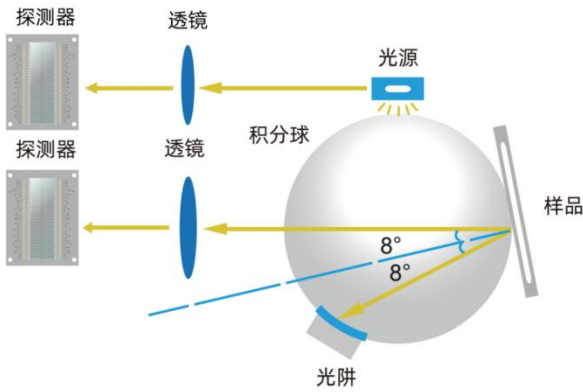


■ **Differential spectrum engine improves overall measurement performance**

The light input of the sensor is increased by 50%, the spectral resolution is increased by 30%, the signal-to-noise ratio is higher, the repeatability, the difference between the instrument, and the data is highly consistent with the data of the standard instrument, the inter-instrument agreement can reach to 0.08, and the repeatability can reach to 0.005. The relevant technologies are protected by Chinese invention patents.



■ **Double optical path design improves repeatability accuracy**



**repeatability accuracy  $dE^*ab \leq 0.005$**

The dual optical path design monitors the energy fluctuation of the light source while measuring the sample signal, reduces interference during measurement, obtains higher measurement stability, and improves the measurement repeatability index of the instrument to  $dE^*ab \leq 0.005$ . The high standard of measurement speed, accuracy, stability and inter-station difference is guaranteed. The relevant technologies are protected by Chinese invention patents and American invention patents.

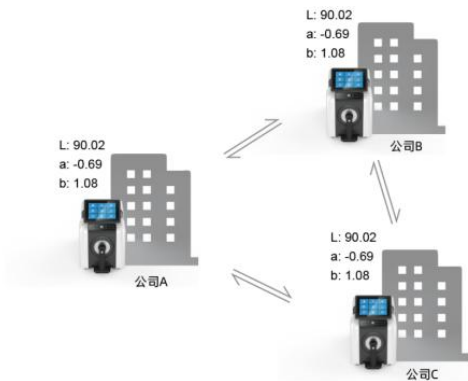
■ **Innovative 1nm resolution grating spectroscopy technology**

Innovation is the soul of CHNSpec. After nearly 10 years of dedicated research, the grating combined array sensor made by the innovative MEMS process makes the color measurement more accurate on the basis of 1nm spectral resolution, once again leading the industry innovation direction and greatly improving the technical performance of the product. The relevant technologies are protected by Chinese invention patents.



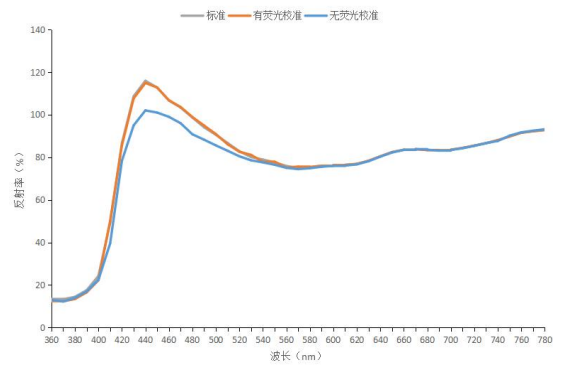


- Excellent inter-instrument agreement:  $dE^*ab \leq 0.08$ ,
- High repeatability accuracy:  $dE^*ab \leq 0.005$ , ensure accurate data transfer between factories



### ■ Self-developed fluorescence calibration technique

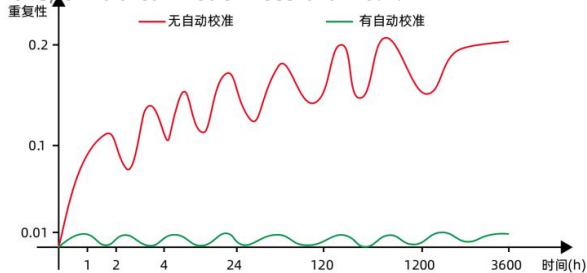
Automatically adjust the UV intensity, and ensure that the instrument value is highly consistent with the reference value when measuring the fluorescent material.



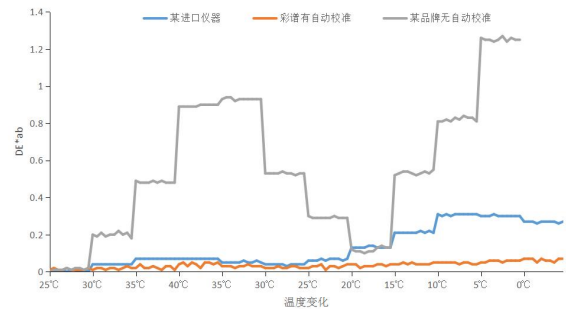
### ■ High precision automatic calibration

Advanced automatic calibration technology greatly improves long-term repeatability of instruments. Under constant temperature, the  $dE^*ab$  of day 1 and day 30 can still reach 0.01. At any temperature change from 0°C to

40°C,  $dE^*ab$  can reach less than 0.1.



Long-term repeatability curve at constant temperature



Repeatability curve of temperature change from 0 °C to 40 °C

■ Easily measure samples of many shapes with a variety of measuring apertures

Four test calibers, free to switch

Support measurement in reflection mode: solid, powder, non-transparent liquid

Support measurement in transmission mode: glass, film, transparent liquid



■ Configure high-definition preview camera

The clarity of the camera has been significantly upgraded, from the original 400dpi to 1400dpi.

When observing the sample, the clarity has been improved by 350% and brightness calibration algorithm has been used to truly restore the color of the ultra dark sample.



Previous generation clarity  
(The color is slightly dark and blurry)

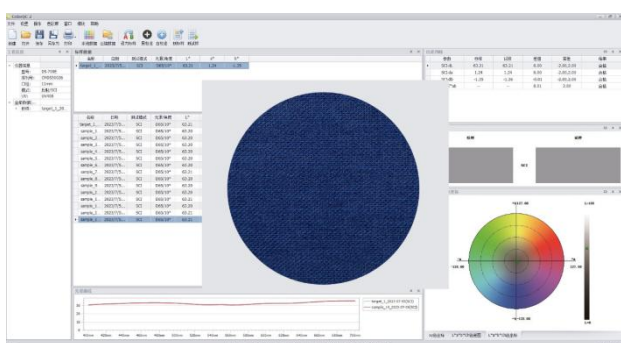


DS-36D clarity  
(Bright and high-definition color)

■ Support for simultaneously saving sample data and images

Recording image information while measuring data

Obtain more sample related information



## Technical Parameter

| Benchtop spectrophotometer             |  |        |        |
|--|--|--------|--------|
| Model                                  | DS-36D   | DS-37D | DS-39D |
| Lighting/measuring conditions          | Reflection: d/8 (diffuse illumination, 8° direction reception)   |        |        |
|  | SCI (Contains specular reflected light) / SCE (not contain specular reflected light) measure at same time. Compliance standards: CIE No.15, GB/T 3978, GB 2893, GB/T 18833, ISO7724/1, DIN5033 Teil7, JIS Z8722 Condition C, ASTM E1164, ASTM-D1003-07 |        |        |
|  | Transmission: d/0 (diffuse illumination, vertical reception)   |        |        |
| Sensor                                 | Differential spectrum engine   |        |        |
| Spectroscopic method                   | Concave grating  |        |        |
| Integrating sphere diameter            | 152mm  |        |        |
| Wavelength range                       | 360nm-780nm  |        |        |
| Wavelength interval                    | 10nm   |        |        |
| Half-wave width                        | 1.6nm  |        |        |
| Reflectance measurement range          | 0-200%, resolution 0.01%   |        |        |
| Lighting source                        | Pulsed xenon lamps and LED   |        |        |
| Ultraviolet measurement                | Includes UV, 400nm cutoff, 420nm cutoff, 460nm cutoff  |        |        |
| Measuring time                         | Single mode <2s  |        |        |
| Lighting/measuring calibers            | Reflection:<br>XLAV Φ25.4mm/Φ30mm; LAVΦ15mm/Φ18mm; MAVΦ8mm/Φ11mm; SAVΦ3mm/Φ6mm<br>Users can customize the calibre, and the calibre switch is automatically recognized<br>Transmission: Φ17mm/Φ25mm   |        |        |
| Transmission measurement specification | Sample height and thickness: height is not limited, thickness ≤50mm  |        |        |

|                                    |   |   |                          |
|------------------------------------|---|---|--------------------------|
| Long-term repeatability            | XLAV chroma value: standard deviation $\Delta E^*ab$ within 0.1 (0°C-40°C arbitrary temperature change)<br>XLAV chroma value: standard deviation $\Delta E^*ab$ 0.01 or less (under constant temperature conditions, the white correction plate is measured every hour within 24 hours)   |   |                          |
| Repeatability *                    | $\Delta E^*ab \leq 0.01$ ,<br>Spectral reflection/transmittance $\leq 0.1\%$  | $\Delta E^*ab \leq 0.005$ ,<br>Spectral reflection/transmittance $\leq 0.1\%$ |                          |
| Inter-Instrument Agreement**       | XLAV $\Delta E^*ab$ 0.18  | XLAV $\Delta E^*ab$ 0.12  | XLAV $\Delta E^*ab$ 0.08 |
| Standard observer                  | 2° and 10°  |   |                          |
| Viewing light source               | A,B,C,D50,D55,D65,D75,F1,F2,F3,F4,F5,F6,F7,F8,F9,F10,F11,F12,CWF,U30,U35,DLF,NBF,TL83,TL84,ID50, ID65,LED-B1,LED-B2,LED-B3,LED-B4,LED-B5,LED-BH1,LED-RGB1,LED-V1,LED-V2   |   |                          |
| Language                           | Simplified Chinese, English, Traditional Chinese, Russian, Spanish, Portuguese, Japanese, Thai, Korean, German, French, Polish  |   |                          |
| Display content                    | Spectral data, Spectrogram, chromaticity data, chromaticity Data, chromaticity map, Pass/Fail judgment, Simulation color, Color evaluation, fog, liquid chromaticity, Color bias  |   |                          |
| Color space                        | CIE LAB,CIE LUV,LCh,Hunter Lab,Yxy,XYZ,Musell,s-RGB, $\beta xy$   |   |                          |
| Chroma index                       | WI(ASTM E313-20,ASTM E313-73,CIE,ISO2470/R457,AATCC,Hunter,Taube,Berger Stensby),YI(ASTM D1925,ASTM E313-20,ASTM E313-73),Tint(ASTM E313-20),Isochromatic index Milmm, color fastness, color changing fastness,ISO brightness,R457,A density,T density,E density,M density,APHA/Hazen/Pt-Co(platinum-cobalt index),Gardner(Gardner Index),Saybolt(Seibert Index),Astm color, fog, total transmittance, covering power, force, intensity |   |                          |
| Color difference formula           | $\Delta E^*ab, \Delta E^*CH, \Delta E^*uv, \Delta E^*cmc, \Delta E^*94, \Delta E^*00, \Delta Eab$ (Hunter),555 color tone classification  |   |                          |
| Storage                            | 8GB   |   |                          |
| Screen size                        | 7-inch capacitive touch screen  |   |                          |
| Operating system                   | Android   |   |                          |
| Power source                       | Dc regulated power supply   |   |                          |
| Operating temperature and humidity | 5 ~ 40°C, relative humidity 80%(35°C) below no condensation   |   |                          |
| Storage temperature and humidity   | -20 ~ 45°C, relative humidity 80%(35°C) below no condensation   |   |                          |

|                          |  |
|--------------------------|--|
| Accessories              | Power adapter, USB cable, transmission fixture, software U disk, black cavity, white board, green board, 30mm aperture, 18mm aperture, 11mm aperture, 6mm aperture, support table, cuvette,  |
| Optional accessories     | Heating transmission jig (including control circuit), vertical bracket, pneumatic jacking rod (including control circuit), small sample holding accessories, reflection cupping plate (non-removable), fiber test box, film jig, micro transmission jig, rod box, European standard plug, American standard plug |
| Port                     | RS-232、USB、USB-B、Bluetooth   |
| Camera positioning       | Ultra HD camera (1400dpi)  |
| Automatic calibration    | √ (Can greatly improve the long-term repeatability of the instrument)  |
| Fluorescence calibration | √ (Can automatically adjust the UV intensity, and ensure that the value of the instrument is highly consistent with that of other imported instruments when measuring materials containing fluorescence)   |
| Brightness calibration   | √ (Through the brightness calibration algorithm, the real color of ultra-dark samples is restored)   |
| Others                   | The instrument can be measured sideways, up and down (using accessories); Automatic temperature and humidity compensation function; PC side software save sample image function  |

※ After instrument calibration, the white correction plate was measured 30 times at 5-second intervals to measure the standard deviation of the result in XLAV caliber

※※ Based on 23°C, the average value of XLAV aperture measurement of 12 swatches of BCRA Series is measured

**CHNSpec Technology (Zhejiang) Co., Ltd**

Address: 166 Wenyuan North Road, Qiantang District, Hangzhou City, Zhejiang Province  
 TEL: 4007-7272-81  
 Website: [www.chnspec.com](http://www.chnspec.com)





## CHNSpec Technology (Zhejiang) Co., Ltd



CHNSpec Technology (Zhejiang) Co., Ltd. is a leading Chinese enterprise in the field of color and appearance measurement devices, mainly engaged in the research and development, production, and sales of color detection equipment. The products include colorimeter, spectrophotometer, transmittance haze meters, gloss meter, paint color matching software, hyperspectral cameras, and are widely used in industries such as plastic, coatings, printing, automotive parts, metals, home appliances, universities, and research institutions both domestically and internationally.

CHNSpec Technology (Zhejiang) Co., Ltd is located in Xiasha Higher Education Park, Hangzhou City. The main responsible person of the company has a senior professional title and a doctoral degree or above. The company has introduced R&D teams from well-known universities such as Zhejiang University and China Jiliang University. The development of color spectrum has attracted the attention of domestic experts and scholars, and has cooperative relationships with authoritative research



institutions such as the Zhejiang Provincial Key Laboratory of Modern Metrology and Testing and Instruments, the National Engineering Center for Metrology and Testing Technology of the Ministry of Education, etc. With the care of various experts, the technical level and research and development capabilities of CHNSpec Technology (Zhejiang) Co., Ltd have achieved leapfrog development and achieved remarkable results. CHNSpec Technology (Zhejiang) Co., Ltd has a number of invention patents, including one American invention patent, a number of utility model patents, appearance patents, and software copyrights.

In addition, multiple invention patents are still in the announcement stage. CHNSpec Technology (Zhejiang) Co., Ltd has published multiple papers in domestic first-class scientific research journals and has been included in SCI and EI.

# Qualification



## Patented technology



## Product certificate



CE Certificate



Full Test Report



RoHS Certificate



FCC Certificate



UKCA Certificate



Verification Certificate  
of National Institute of Metrology

## Participation in standard development



Specification for calibration of Pt-Co colorimeters



Leather color fastness test - Change in color under accelerated aging conditions (QB/T 5250-2018)



Leather Color Fastness Test - Color Migration onto PVC Film (QB/T 5252-2018)

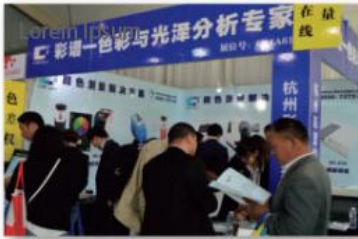


Textiles - Quantitative analysis of polyester blended fabrics - Hyperspectral method



Color fastness test - Rating of staining on adjacent fabrics - Hyperspectral method

## Industry conferences



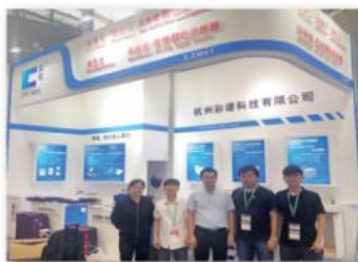
Chinaplas 2016



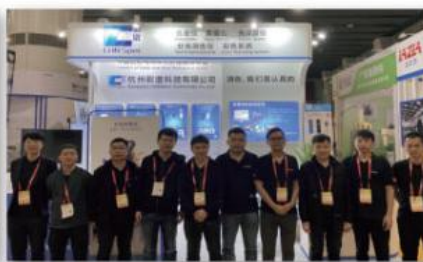
2016 CHNSpec Technology Seminar - Dongguan Station



2016 CHNSpec Technology Seminar - Guangzhou Station



Chinaplas 2019



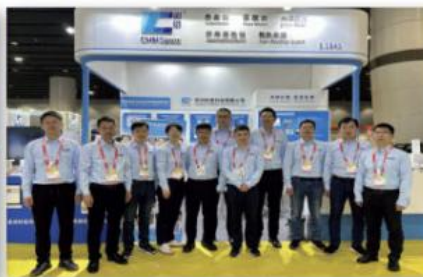
The CHINACOAT Series Of Exhibition 2020



United Coatings Conference 2022



2023 Chongqing Color Masterbatch Annual Conference



The CHINACOAT Series Of Exhibition 2023



2023 Shanghai Sewing Industry Annual Conference

# Partners

Testing organization



河北省计量检测研究院



浙江省计量测试研究院



国家皮革质量监督检验中心(浙江)



中国标准化研究院公共安全标准化学研究所



深圳市计量质量检测研究院



国际科技实验室认可委员会

School



清华大学



北京大学



浙江大学



复旦大学



华东理工大学



上海大学

Plastic



大众



北京现代



LEADER



KINGFA  
金发科技



HAERS  
哈尔思



WOTE  
沃特股份

Electronic appliances



OPPO



MI



HUAWEI



VIVO



Hisense



GREE  
格力

Textile



COATS



adidas



CONVERSE



YISHION  
以纯



苏州圣德纺织有限公司



上海慈迪  
SHANGTEX

Food



康师傅



TSINGTAO  
青岛啤酒



海天



今麦郎



红星二锅头



KANSUI

Home decoration



KUKA



宜家家居



立邦



TUBAO  
兔宝宝



Bairun  
百润



SIDA  
中国·多邦

Paint



SHERWIN  
WILLIAMS



CAPAROL  
德安威



JAIHO  
大宝漆



KEYTEC  
KEYTEC COLOURS



展辰涂料



三棵树



**Computer data management software Color Expert download address:**

<https://colormeter.hzcaipu.com/download/windows>

**QR code of "Colorimeter" on WeChat official account:**

(Follow the official account and view the operation video)

