



REFLECTION

Magazine of photometry and colorimetry



How to select a colour measurement system

A new class of spectrophotometers for the laboratory

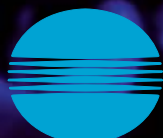
The CM-3600d series: a magic black box

Treepoint and BARCO-SEDO

Partnership for Textile Excellence

Absolute Fluorescent Color Measurement

CM-3800d: Fluorophisticated Technology



MINOLTA

How to select a colour measurement system

Selection of a colour measurement system is an important issue, because it determines the objective basis for better colour communication. The selection process is complex due to the diversity of specifications claimed by equipment on the market.

Analyse and diagnose the situation

- Analysis of the working environment, in terms of applicable colorimetry standards and customer or supplier requirements. Analyse the situation at all sites to access how colour is managed there and discuss methods improving communication on colour matters. Define colour tolerances and test procedures with suppliers for incoming goods, with subcontractors to decide test methods, and with customers to know their colour specifications on finished products.
- Establish an inventory on operational situation:
 1. methods used for defining colour standards and tolerances;
 2. handling of colorimetric data;
 3. tracking of colour transformation processes;
 4. implementation of colour testing methods at each stage;
 5. understanding of factors liable influence changes in colour;
 6. assure that all these factors are under control: Consistency of raw materials, Pre-treatment, Laboratory Dyeing, Production process, Subcontracting, Finishing.
- Diagnosis to identify strong points and weak points in the management of colour, and conduct an economic analysis on the cost of colour non-compliance and the potential savings through improved working practice.

Determine a solution

The best solution will be the one, that offers the closest match between the system capabilities and the actual requirements. Requirements must therefore be accurately specified, in terms of performance level, precision, and operating conditions.

Performance and precision

Performance and precision requirements will chiefly depend on the type of application. Typical applications include R&D, setting standards and tolerances, colour matching and correction, quality control in the laboratory and production or process control.

These applications can be networked, for instance a new colour recipe is calculated in the lab with a colour matching system, sent to production for quality control and possibly recipe correction, and finally stored with production statistics in the customer file. This has strong influence on the choice of the instruments, which should give same readings even on different instrument models.



The portable CM-508d with a special adapter for perfect measurements on bobbins

Requirements

The type of data to be supplied by the system, as well as the instrument characteristics are essential points to be specified:

- Graphic plots
- Colorimetric systems and equations for colour deviation
- Standard illuminants and observers
- Instrument geometry
- Need for UV emission
- Spectral range
- Wavelength interval
- Photometric range
- Size of measuring aperture
- Repeatability
- Inter-instrument agreement

*Innovative and compact:
The bench-top Spectrophotometer
CM-3600d*



On repeatability and inter-instrument agreement, great caution is required when studying claims in vendors' sales and technical documentation, because manufacturers use different methods for testing instruments. Furthermore, specifications are often expressed in different units that are not comparable. Therefore, it's a good idea to make your own tests!

The same goes for comparing specifications for inter-instrument agreement. The most honest way expressing inter-instrument agreement is the maximum deviation on BCRA ceramic tiles. Only a maximum deviation value for inter-instrument agreement is a truly reliable indicator.

The merits of new technology

Huge progresses have recently been made in the design of instruments. Digital technology allows innovation and offers versatility, user comfort and low cost without compromise on quality, performances, functions and reliability for the user. Minolta's new bench-top spectrophotometer CM-3600 series features simultaneous SCI and SCE readings, instead of a mechanically driven gloss trap, and numerical UV control eliminates time consuming traditional UV adjustment by moving filters. All Minolta bench top models assure same readings independently from aperture sizes and therefore can be networked with portable models of the CM-500 series.

Operating conditions

Specifications of operation conditions should include the following points:

- What has to be checked on the product at this stage?
- Portability required or not?
- Test and sampling procedures?
- Operator functions and qualification levels?

Analyse the market offer

- Seek a solution that meets all your requirements, without compromise.
- Assess full-solution capabilities: instruments, accessories, software, services.
- Assess supplier capabilities:
 - capacity to offer effective assistance, advice and service
 - capacity to understand and meet requirements

Minolta, known as the leading manufacturer of highly innovative optical precision instruments, offers the largest range of bench-top and portable spectrophotometers, which have gained highest reputation for textile applications around the globe. The large choice of products assures optimum compliance to cope with the specific needs of any customer in the long chain of textile products manufacturers, confectioners or retailers.

Editorial

Welcome to ITMA 99!

What a chance to have ITMA just before the end of the century! What a good opportunity for you to see, to evaluate, to compare and to collect the best informations necessary to judge and to decide how and with whom your company should enter the new millennium to cope with the challenges of competitive world-wide economy and to match the increasing requirements of more and more versatile customers.



An exhibition is the best opportunity to have a close look, and to get in touch. Come to our booth, touch and feel the difference! You will see the merits of technology and design when used and applied for specified industrial solutions. Discuss with our experienced application engineers and sales representatives the potential benefits for your activity day after day. They know your business and can explain the advantages you will find to work with Minolta.

As professional people fully devoted, working with a «problem solving» spirit, and promoting the largest range of colour measuring instruments, we will propose what is best for you for R&D and quality control. And you will see it at the booth or we will introduce our partners who provide full solutions with high added value around our instruments such as colour matching, quality control, dyehouse management, online colour control or CAD.

It is no mystery why more and more major companies in the textile world turn to Minolta. How about you?

Enjoy your stay with us and achieve one of your most profitable visits during this exhibition.

This special issue of «Reflections» unveil you the ITMA 99 highlights at Minolta and many more valuable informations such as how to select a colour measuring instrument, Minolta partners list in Europe, and addresses of our world-wide distribution network.

Have a successful ITMA 99 and a pleasant stay in Paris!

Michel Boullenger
Sales & Marketing Manager Europe,
Minolta GmbH

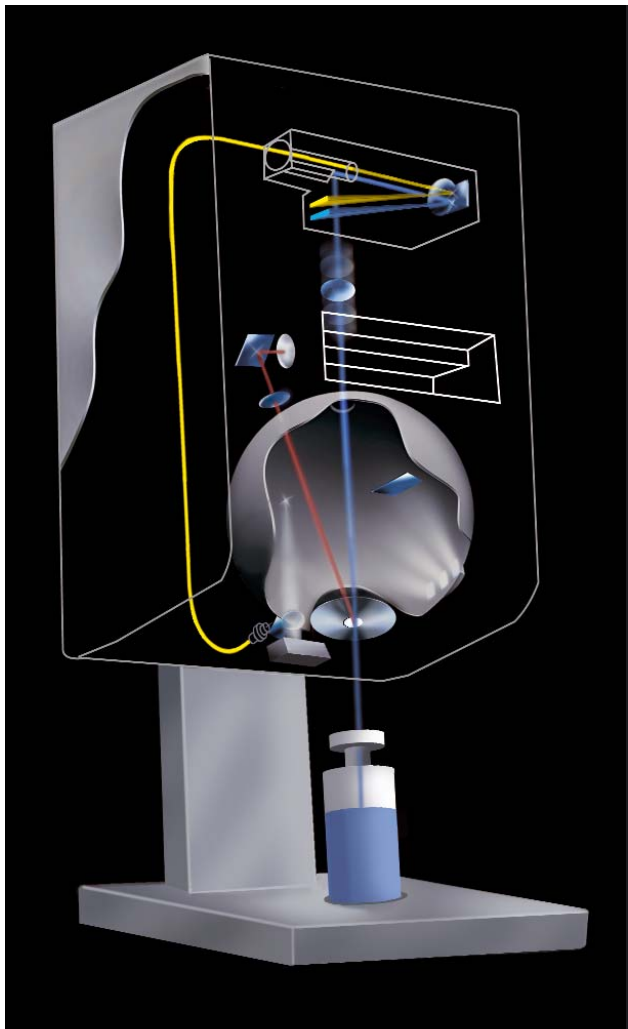
A new class of spectrophotometers for the laboratory

The CM-3600d series: a magic black box

Launched in 1993 the CM-3700d was the first desktop spectrophotometer from Minolta. It very soon acquired a worldwide reputation as a state-of-the-art reference instrument which remains till today. Following these successes, Minolta began development of a model designed for the middle price range while retaining the highest quality level and universal applicability of the CM-3700 series.

The result is the CM-3600d series, a line of highly innovative laboratory spectrophotometers with a hitherto unimaginable price/performance ratio. Equipped with Minolta Innovative Optical system technology, these models contain a series of patented world innovations that impressively demonstrate Minolta's leadership and expertise in the field of optical electronics. **Numerical gloss control and numerical UV control.**

The technical progress consisted in minimizing the number of moving parts by means of solutions that were both innovative and cost saving. The sphere has a diameter of 15.2 cm and d/8° geometry.



CM-3600d

It contains a second xenon flash in place of a conventional motor-driven gloss trap.

It is located below the measurement window and, thanks to the precise focusing of its optical system, illuminates only that part of the sphere on which the gloss trap is usually placed. This means that it measures only the specimen's reflection without the gloss. Together with the first flashlight, that measures the total diffuse reflection, the CM-3600d takes few seconds to compute the results with and without gloss. This is an enormous step forward in terms of convenience and flexibility.

Minolta is also setting new standards with numerical UV control technology for UV calibration and measurement of materials treated with optical brighteners such as textiles, papers and detergents. This has hitherto needed equipment using mechanical driven filters, which were complex, expensive and far from being user-friendly.

Two flashlights replace a complex mechanical system

The numerical UV control system uses two flashlights, one of them providing 100% UV energy and the second one without UV energy using a 400 nm cut-off filter. First, the meter is calibrated for UV by a single measurement against an UV standard, whose reference values are specified in the software. The results of the sequential flashes – the one with 100% UV energy and the other with 0% UV – yield two curves. The standard curve of the specified UV component is then derived from these by calculation.

Calibration can subsequently be performed for either spectral, white or tint values. A calculation based on reflection values also allows other types of illuminants to be analyzed. Another highlight of the CM-3600d is its exclusive «soft-flash power» setting, that avoids the so called triplet absorption occurring from some optical

Minolta Innovative Optical System inside the CM-3610d

brighteners. To do so, the software controls the intensity and duration of the flash.

The likelihood of problems arising from faulty moving parts or incorrect operation is minimised. All mathematical calculations are performed by a virtual black box (unit driver) located between the meter and the software. This brings cost benefits, as EPROMs can be dispensed with, but also allows other methods of optical calculations, for example in order to improve the agreement between various types of instruments.

A class of its own in terms of performance and features

The measuring range of the newly developed monolithic polychromator extends from 360 to 740 nm with 10 nm resolution for the specimen and reference channels. This new grating system with two photodiode arrays ensures far better stability and significantly lower noise sensitivity, especially on dark colours, than systems using CCD sensors. Three measuring masks, with 4, 8 and 25 mm diameter adapt perfectly to different specimen sizes. The specimen is observed via a mirror system equipped with internal illumination, thus allowing reliable and fatigue-free positioning for people who wear glasses.

Superior inter-instrument agreement, without additional costs, as well as good correlation with all portable spectrophotometers are additional user benefits resulting from Minolta's optical leadership and highest quality standards.



CM-3600d and CM-3610d: Two models for unlimited flexibility

The user can choose between two different models: the CM-3600d in horizontal version and the CM-3610d with vertical stand. Especially for textile applications, the CM-3610d offers enhanced handling flexibility. In this version, the sample holder system allows easy handling of large fabrics as well as better control of specimens such as yarns and non-woven samples.

On the other hand, the very compact CM-3600d offers the capability to measure the transmission of liquids such as dyestuffs and other chemical products.

Specimens with larger than A4 format can be accommodated by swinging the specimen holder down by 90° and locking it in place.

Thanks the Minolta innovative optical system, the CM-3600d series offers maximum flexibility, reliability and reference-class features at a price level never seen before!



The new CM-3610d: Perfect for large fabrics, yarns and other textile applications

Treepoint and BARCO-SEDO

Partnership for Textile Excellence



State of the art dye controllers from Barco-Sedo

Over the last decade, Minolta's Radiometric Instruments Operations has built up its worldwide reputation as the leading manufacturer of colorimetric instruments. It offers today an incomparable wide range of colorimetric instruments, ranging from colorimeters to portable and bench-top spectrophotometers.

In this period, numerous «milestone» products have been presented: such as the first portable spectrophotometer CM-2002, which was launched at the 1991 ITMA, or the world's first commercial spectrofluorimeter with $d/8^\circ$ geometry, the CM-3800d, presented for the first time here at ITMA 99 in Paris (see article on page 6).

With the aim in mind to offer to customers not only hard- and software systems but also sound application know-how in textiles, Minolta has cultivated a long tradition in close co-operation with competent system integrators around the globe. The following two portraits emphasise how Minolta with its partners understand their slogan «Partnership for Textile Excellence».

TREEPOINT: The Treetex® Product Line

Treepoint, a Swiss engineering company with a know-how that has been acquired for years, offers with Treetex® a complete range of soft- and hardware products for Dyeing Management. It includes PRISMA® for recipe calculation, QTEX® for quality control as well as the computer assisted system for total dyehouse management TEXLOG®. The colorimetric softwares can be interfaced with all Minolta spectrophotometers.

The new Windows software for colour match prediction PRISMA™

The exclusive dye liquor control system Flex®, for accurate quality control in the pre-production of dye liquor, proves Treepoint's expertise in dye process technology know-how. The development of the complete product line was accomplished in close co-operation with research and development departments of leading textile companies in Europe.

Treepoint's ability to develop custom tailored systems has proven to be a decisive factor for major customers such as Triumph International, Decathlon, Trigma, Otto-Versand or Falke to rely on Treepoint technology. With its branches in Thailand, the Czech Republic and India as well as a large number of representatives in various countries, Treepoint provides an extensive sales network to serve the textile industry.

BARCO-SEDO: Total Solutions for Dyehouse Automation

Barco-Sedo is a subdivision of Barco-Automation, part of the multinational Belgium conglomerate Barco NV. Barco-Automation offers a wide range of technical solutions for the textile industry in the field of yarn spinning, weaving, knitting and finishing as well as complete CIM systems.

Barco-Sedo is famous for their wide range of dye-house controllers suited for every specific requirement. Furthermore, with their central dyehouse management system SEDOMASTER®, central creation, storage and management of dye programs, production scheduling, production and process monitoring and inventory control for dyestuffs and chemicals can be controlled.

With the COLORMASTER® system for recipe calculation, Barco-Sedo can respond to any degree of vertical integration request, precisely matching the specific needs of customers. The recent take-over of Beacon has further opened their ability in this way.

For their colorimetric systems, Barco-Sedo relies on the superiority of Minolta spectrophotometers. Barco-Sedo and Barco-Automation are globally represented in Europe, the Middle and Far East as well as in North and South America with an extensive application service, sales and after sales service network.



Absolute Fluorescent Color Measurement

CM-3800d: Fluorophisticated Technology

In the last decades the textile industry faced the challenge of an accelerating speed of changes in fashion, customers needs and taste. Fluorescent components have established an essential role when it comes to the development of new colors and special color effects.

In the production of white cloth for instance optical whitening agents are of significant importance. The whitening effect that enhances the whiteness of, for example, shirts, results from the fact that optical whitening agents absorb ultraviolet light on the textile, and emit them as visible blue light causing whiteness to improve.

However, because of this characteristic, the observed reflectance of fluorescent colors varies with the light illuminated on the specimen. Up to now conventional spectrophotometers only enable measurement of reflectance, which depends on the light source of the spectrophotometer. As a result, at this moment, evaluation of fluorescent colors is normally carried out visually; work which requires a high degree of expertise and experience of the person at quality control process stage.

The Minolta CM-3800d is the innovative answer to such uncertainty, providing high-accuracy measurement, evaluation and control of fluorescent colors used in textiles and various other applications such as paper, sports goods, poster and drawing materials. It can be used in a wide range of applications, from research and evaluation of fluorescent dyes and pigments to quality control of fluorescent colors.

Fluorescence Measurement of Structured Specimens

The CM-3800d is equipped with a large integrating sphere (152 mm in diameter) to provide a perfect diffuse illumination of the sample from all directions. Thanks to this technical feature

the CM-3800d can take measurements independently of the surface conditions even on structured or textured specimens – a key condition of fabrics and fibres.

Secondary illumination is extremely low thanks to the excellent ratio of sphere surface vs. openings of less than 0.3%!

Rapid Measurement Mode

The core feature of the CM-3800d is a double monochromator system. A grating in front of the Xenon lamp separates the light of the illumination source into monochromatic lights at 10 nm pitch and emits the light on the specimen after they have been completely diffused by the integrating sphere.

The emitted and reflected light from the specimen is received by a polychromator sensor to calculate the spectral values. This polychromatic light-receiving sensor, composed of 38

spectral sensors, allows simultaneous reception of the light coming from the specimen, resulting in drastically reduced measurement time, compared with the conventional measurement method, where only one sensor is used and reflected light is measured one by one.

Minolta's Partnership with NISSHINBO Software Department

Taking the best of two experienced specialists, Minolta CM-3800d hardware incorporates a QC software developed by NISSHINBO, an expert in the textile industry since its foundation in 1907 that can also rely on sound knowledge in the fields of automobile, paper, chemical and the machinery industries.

The Minolta Spectrofluorimeter CM-3800d provides future technology for today's requirements in color measurement.

*High class
Lingerie, a typical
application for
optical brighteners*



CM-3800d



*Fluorescent colours,
perfect visiblenss
for maximum attention*

Minolta world wide ...

Austria:	Minolta Austria Ges.m.b.H. 1131 Wien Phone: 01-87882-430, Fax: 01-87882-402	Korea:	Minolta Co., Ltd. Seoul Office 475-22, Bangbae-Dong, Seocho-ku, Seoul Phone: 523-9726, - 9727, Fax: 523-9729
Belgium:	Minolta Camera Benelux 2630 Aartselaar Phone: 03-8772421, Fax: 03-8771372	Singapore:	Minolta Singapore (Pte) Ltd. Singapore 608923 Phone: 563-5533, Fax: 561-9879
Denmark:	Paul Westheimer A/S Industri 2610 Rodovre Phone: 04485-3400, Fax: 04485-3401	Spain:	Aquateknica, S.A. 46022 Valencia Phone: 96-3302013, Fax: 96-3300396
England:	Minolta U.K. Ltd. Milton Keynes, MK13 8HF Phone: 01-908200400, Fax: 01-908618662	Sweden:	Minolta Svenska AB 17109 Solna Phone: 08-627-7650, Fax: 08-627-7685
Finland:	Mitäten Finland Oy Ab 02700 Kauniainen Phone: 09-5114 7490, Fax: 09-5114 7495	Switzerland:	Minolta (Schweiz) AG 8953 Dietikon Phone: 01-7403727, Fax: 01-7422350
France:	Minolta France S.A. 78420 Carrières-sur-Seine Phone: 01-30866161, Fax: 01-30866280	The Netherlands:	Minolta Camera Benelux B.V. 3600 HA Maarssen Phone: 30-2470860, Fax: 30-2470861
Germany:	Minolta GmbH 22923 Ahrensburg Phone: 04102-701, Fax: 04102-70325	Turkey:	SEM Limited 81010-Acibadem, Kadiköy-Istanbul Phone: 0216-3257836, Fax: 0216-3251624
Hong Kong:	Minolta Hong Kong Limited Phone: 2565-8181, Fax: 2565-5601	U.S.A.:	Minolta Corporation New Jersey 07446 Phone: 888-473-2656, Fax: 201-825-4374
Italy:	Minolta Italia S.p.A. 20157 Milano Phone: 02-39011-1, Fax: 02-39011-219		
Japan:	Minolta Co., Ltd. Radiometric Instruments Operations Osaka 541-8556 Phone: +81 66 271 2344, Fax: +81 66 271 2389		

Minolta Textile-Partners

France:	STE CHAMBON FORENTEX ENNOBLISSEMENT TEXTILE 07 600 Asperjoc Phone: 04 75 37 47 05, Fax: 04 75 37 67 65	Italy:	IRIDE CENTRE s.r.l. 13900 Biella Phone: +39 015 8494103, Fax: +39 015 8408337	Hall 7/3 / K04/a
	STE INFO DESIGN 75011 Paris Phone: 01 53 36 53 00, Fax: 01 48 05 75 61		ORINTEX s.r.l. 59100 Prato Phone: +39 0574 575655, Fax: +39 0574 572266	Hall 7/3 / L05
	STE ONYX 69500 Bron Phone: 04 78 26 38 99		SOFTEX s.a.s 24035 Curno – BG Phone: +39 035 4376297, Fax: +39 035 4375364	
Germany:	Barco-Sedo GmbH 35794 Mengerskirchen Phone: +49 64 76 310, Fax: +49 64 76 31 31		TALIA SERVIZI s.r.l. 36073 Cornedo Vicentino – VI Phone: +39 0445 446620, Fax: +39 0445 446651	
India:	JAY INSTRUMENTS & SYSTEMS PVT. LTD Mumbai 400 018 Phone: +91 22 4954891, Fax +91 22 4950489	Japan:	NISSHINBO INDUSTRIES, INC. COLOR SYSTEMS DEPARTMENT Okazaki Phone: +81 564 57 2454, Fax: +81 564 58 3816	
		Switzerland:	Treepoint 8630 Rüti Phone: 055 251 40 80, Fax: 055 251 40 89	Hall 7/3 / G10

Internet Home Page

Europe:	http://www.minoltaeurope.com
USA:	http://www.minoltausa.com
Japan:	http://www.minolta.com/japan/rio/e/index.html

Masthead

Publisher
Minolta GmbH
Kurt-Fischer-Strasse 50,
D-22923 Ahrensburg
Phone: +49 4102/70226
Fax: +49 4102/70327

Edited by:
Dorothea Brandes,
Andreas Ullrich
Minolta GmbH

Concept by:
fkp & partner AG
CH-8953 Dietikon

Pictures by:
Minolta
Core Cognac
Jenny Hesse

