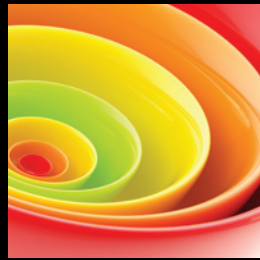


gti



Color Matching Systems

For color matching, inspection, and aesthetic appraisal

COMPLIANT WITH

ASTM D1729-2009, SAE J361 AND BS-950 PART 2 STANDARDS

cmlite

gti **truelight**
truecolor

True Light. True Color.

A Commitment to Industry Standards and Guaranteed Quality

Whenever an object is viewed, the color seen is a result of the color quality of the light source and the reflective characteristics of the object. So, when attempting to achieve an accurate color match using different colorants, colors can appear to match under one light source and then appear significantly different under another light source. Therefore designers, brand owners, and production staff should all evaluate a color under a consistent light source. The D65 daylight source specified in the ASTM D1729-2009 standard displays a full range of spectral energy and provides an ideal viewing environment that can be easily replicated with an ASTM D1729 compliant lighting system. When all parties in the supply chain view a product under standard lighting conditions a satisfactory color match is easily achievable.

World Leading Critical Color Matching and Inspection

GTI is the leading manufacturer of lighting systems for critical color matching, inspection, and aesthetic appraisal. We offer a wide variety of lighting systems that are designed to help companies concerned with accurate and consistent color



Using a spectroradiometer in GTI's color lab.

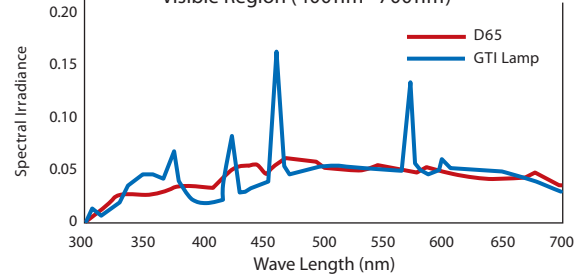
appearance and reproduction to make visual judgments with 100 percent confidence. GTI's CMLite color matching systems meet the strict ASTM D1729-2009 standard for color viewing and have a CIE rating of B/C based on CIE Publication 51, one of the highest in the industry. From desktop systems to complete harmony rooms, GTI can configure a color matching system to meet your requirements.

A properly designed color matching system includes the reflector, diffuser, the booth structure, the proper surround (Munsell N7/), geometry of illumination, and most importantly the lamps. The GTI ColorMatcher 6500K color matching lamp has exceptional color rendering properties and provides consistent and accurate D65 color quality. GTI's 6500K lamps not only include energy in the visible spectrum, but also in the near UV area of the spectrum to provide a far more accurate simulation of true daylight to observe the effects of fluorescent brighteners.

The best color rendition is achieved by having the closest match to the spectral power curve of the industry's D65 aimpoint. Due to GTI's commitment to the industry standards, our 6500K color matching lamps provide a close match to the D65 spectral specifications, resulting in tight compliance with CIE standards.

GTI ColorMatcher D65 Lamp

Spectral Power Distribution
Visible Region (400nm – 700nm)



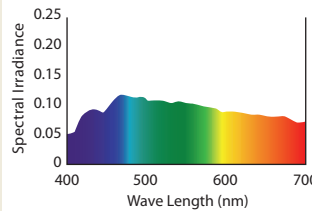
GTI ColorMatcher 6500K lamps deliver the tightest match to the industry standard D65 curve. This results in greater color fidelity and tighter compliance to the viewing standard than other D65 lamps.

Standard Illuminants

The spectral power distribution (visible region of 400nm – 700nm) of typical illuminants specified for visual color matching are shown below. Note the significant differences in shape which enhance detection of metamerism.

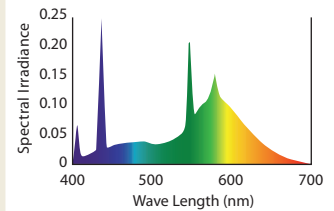
Daylight (CIE D65, 6500K)

Full Spectrum and Color Balanced
for Critical Color Evaluation
and Color Communication



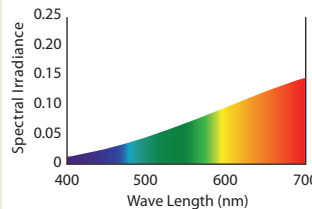
Store Light CWF (4100K)

Green/Yellow Bias, High Lumens/Watt,
Energy Efficient



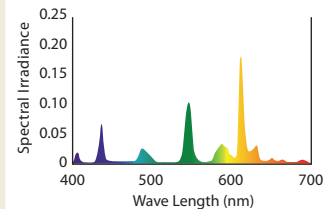
Home Light Incandescent (CIE 'A', 2856K)

Red/Orange Bias, Tungsten Filament Source



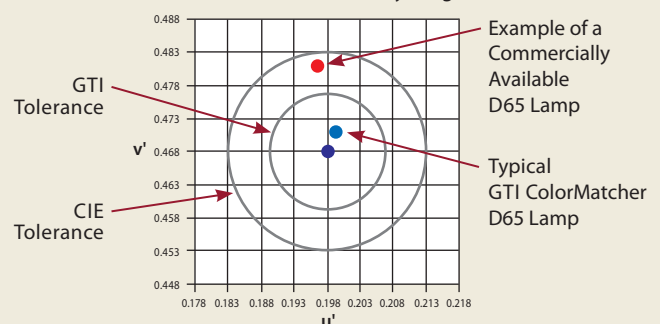
Optional TL83 (3000K)

Green Bias, Triphosphor Narrow Band,
Energy Efficient



Color Quality

CIE 1976 UCS Chromaticity Diagram



Premier Critical Color Inspection Systems

The ColorMatcher series is designed to help you evaluate and communicate color with absolute confidence. Multiple light sources provide an essential tool for visual color match assessment, comparison of color variation, and detection of metamerism.

All CMB models comply with industry standards including ASTM D1729-2009, SAE J361 and BS-950 Part 2 and are supplied with a certificate of product conformance (NIST traceable).

Four standard models are available to accommodate nearly any sample size.



ColorMatcher model CMB-2540

ColorMatcher Models

Model	CMB-2028	CMB-2540	CMB-3052	CMB-3064
Viewing Area (H x W x D)	19" x 28" x 20" 48cm x 71cm x 51cm	25" x 40" x 25" 64cm x 102cm x 64cm	30" x 52" x 30" 76cm x 132cm x 76cm	30" x 64" x 30" 76cm x 163cm x 76cm
<i>Units can be combined for increased width. Plus, larger custom sized units are available.</i>				



Digital controls provide "Instant On" lamp selection

ColorMatcher Features Include:

- Five light sources
 - Artificial daylight (D65, D75, or D50)
 - Store light (CWF or TL84)
 - Home Light (Incandescent A)
 - Optional source (D50, TL84, TL83, Horizon, or LED)
 - Ultraviolet light
- GTI ColorGuard II —Tracks light source usage and indicates when to relamp
- Push Button—"Instant On" lamp selector
- Automatic light source sequencing
- Removable side walls to accommodate larger samples
- Optional stand, drawer, and cabinet accessories

Floor Stand and Storage Options

- Floor stands on casters are available for all models and are height adjustable at setup.
- File drawers are available in single deep (1F) or double shallow (2F) and can be used with or without floor stands and cabinets.
- Storage cabinets are available for CMB-2540 and CMB-3052 models. Cabinets can be combined with single (1F) or double (2F) drawers or riser (TS).
- Flat files can be incorporated in CMB-2540 and CMB-3052 models. Flat files can be combined with single (1F) or double (2F) drawers or riser (TS).



CMB-2540/FS color matching booth with floor stand



CMB-2540/FS color matching booth with floor stand and two shallow flat file drawers (2F-2540)



CMB-2540 color matching booth with two shallow flat file drawers (2F-2540) and storage cabinet (SC-2540)



CMB-2540 color matching booth with one deep flat file drawer (1F-2540) and eight shallow flat file drawers (FD-2540)

Tabletop Color Matching and Inspection Systems

The MiniMatcher series is ideal for the viewing of cosmetics, coatings, consumer goods, ink, packaging, fashion, and more. The ASTM D1729-2009 compliant MiniMatcher series is available in five standard models.

The MM-1e and MM-2e provide three different light sources to help assure accurate visual color assessment and color comparison as well as easy detection of metamerism. UV or LED are available as an option. Light sources are controlled by individual rocker switches. An optional elapsed time meter to monitor lamp usage is available.

The MM-4e, MM-2448e, and MM-2460e include five unique light sources with a built-in daylight timer and an illuminated push button control that confirms which light source is selected. To help improve consistency, these viewing booths are easily programmable to provide one touch automatic light source sequencing; automatic sequencing provides a fixed viewing time for each source.







MiniMatcher models MM-2e (at left) and MM-1e (below)

MiniMatcher Models

Model	MM-1e	MM-2e	MM-4e	MM-2448e	MM-2460e
Viewing Area (H x W x D)	14.25" x 24" x 13.25" 36cm x 61cm x 34cm	13" x 18" x 10" 33cm x 46cm x 25cm	14.25" x 24" x 16" 36cm x 61cm x 41cm	22.75" x 48" x 23" 58cm x 122cm x 58cm	22.75" x 60" x 23" 58cm x 152cm x 58cm
Standard Light Sources	<ul style="list-style-type: none"> • Artificial Daylight (D65, D75 or D50) • Store Light (CWF or TL84) • Home Light (Incandescent A) • Optional – Ultraviolet (UVA BLB) or LED 		<ul style="list-style-type: none"> • Artificial Daylight (D65, D75 or D50) • Store Light (CWF or TL84) • Home Light (Incandescent A) • Your Choice (D50, 30U, TL84, TL83, Horizon, or LED) • Ultraviolet (UVA BLB) 		

COLORMATCHER AND MINIMATCHER VIEWING ENHANCEMENTS

Description	45° Viewing Stands Munsell N7/Gray for viewing flat samples	Variable Angle Viewing Tables Munsell N7/Gray viewing table for flat samples	Matte Black Insert Panel Sets For improved viewing of glossy, highly specular, and/or dark objects	Accessory Directional Light A directional light source for gonio-apparent coatings
	 VS-45/DC	 VVT-816	 BI-MM-1e	 FX-CMB
Accessory Part Number/ MM/CMB Model	Part No. VS-45/2e (8.5" x 16")	Part No. VVT-1224 (12" x 24")	Part No. BI-MM-1e	Part No. FX-CMB
Available for	MM-2e	CMB-2028 or larger	MM-1e	All ColorMatcher Booths
	VS-45DC (8.5" x 22")	VVT-816 (8" x 16")	BI-MM-2e	/FX
	MM-1e, MM-4e, CMB-2028	MM-1e, MM-2e or larger	BI-MM-4e	For all MiniMatchers add /FX after the model number
	VS-2540 (12" x 36")		BI-CMB-2028	ie. MM-1e/65/FX
	CMB-2540 or larger		BI-CMB-2540	
	VS-3052 (12" x 48")		BI-CMB-3052	
	CMB-3052 or larger		CMB-3052	

Dimensions shown (where applicable) are viewing areas

Multi-Source Overhead Luminaires

For Large Sample Color Viewing

GTI's overhead luminaires are the key component when configuring an ASTM D1729-2009 compliant large sample viewing area. Luminaires are available in two styles.

GLE-M Luminaires

The robust GLE-M series of multi-source luminaires utilizes an innovative optically clear, UV transmitting, prismatic diffusion lens for optimal light distribution. GLE-M series luminaires are available with three, four, or five light sources.

Standard units include a line cord, GTI ColorGuard II, and front-mounted selector/sequencer control panel. GLE-M luminaires can be configured with a wireless remote control and up to eight luminaires can be combined to configure a system for a large area or color matching room.

GLE-M luminaires ordered with a wireless remote include a luminaire equipped with a wireless receiver, wireless remote control, plus two output connectors which can be used to control additional luminaires in multi-unit applications. GTI ColorGuard II and digital light source control are also included.



GLE-M Luminaire (above)

One wireless remote (at left) can control up to eight luminaires

GLE-M Luminaire Models

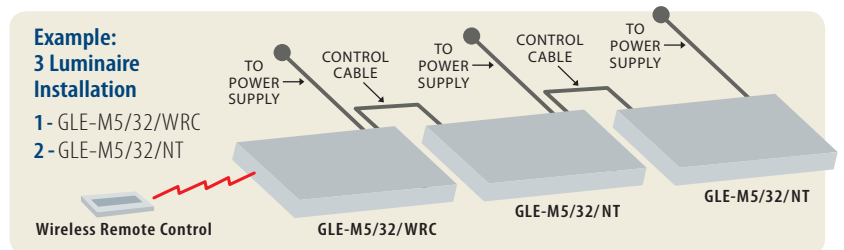
Model	Number of Light Sources	Light Sources	Dimensions (H x W x D)
GLE-M5/32 ¹	Five	D65, CWF, Incandescent, UV, Optional Source ²	3.5" x 52" x 30" / 9 cm x 132 cm x 76 cm
GLE-M3/32 ¹	Three	D65, CWF, Incandescent	3.5" x 52" x 30" / 9 cm x 132 cm x 76 cm
GLE-M4/32 ¹	Four	D65, CWF, Incandescent, UV	3.5" x 52" x 30" / 9 cm x 132 cm x 76 cm
GLE-M5/40 ¹	Five	D65, CWF, Incandescent, UV, Optional Source ²	3.5" x 64" x 30" / 9 cm x 163 cm x 76 cm

¹ Add /WRC to model number to include a wireless remote control (ie. GLE-M5/32/WRC)

For multi-unit remote controlled installations:

One GLE-M luminaire equipped with a wireless remote (/WRC model) can link to additional GLE-M units (/NT model). Add /NT to model number for 2nd - 8th luminaire in a multi-unit configuration (ie. GLE-M5/32/NT)

² Optional light sources for GLE-M5/32 and GLE-M5/40 models are D50, TL84, TL83, Horizon, or LED



GLL-e Luminaires

The basic GLL-e is an affordable luminaire that provides up to three light sources. GLL-e luminaires must be hard wired into individual power circuits (one for each light source) and do not have a built in light control selector.



GLL-e Luminaires can be hung from a ceiling with chains or installed into a drop ceiling.

GLL-e Luminaire Models

Model	Number of Light Sources	Light Sources	Dimensions (H x W x D)
GLL-432e	One	D65, D75, or D50	5.75" x 48.75" x 23.75" / 15 cm x 124 cm x 60 cm
GLL-D5e	Two	D65 and D50 or other	5.75" x 48.75" x 23.75" / 15 cm x 124 cm x 60 cm
GLL-DS/40e	Two	D65 and D50	5.75" x 60.75" x 23.75" / 15 cm x 154 cm x 60 cm
GLL-M3/32e	Three	D65, CWF (or TL84), and Incandescent*	5.75" x 48.75" x 23.75" / 15 cm x 124 cm x 60 cm

*Alternate light sources are available

Evaluating Color, Appearance and Finish

Color Harmony Inspection System

Initially developed for quality control in the finishing of automobiles, the Color Harmony Inspection System can be used for inspecting exterior coatings and accessories on any large object. The Color Harmony Inspection System is moveable on casters and provides multiple angles of illumination.

Features include dual intensity/high output, high color rendering D65 daylight lamps, with separately controlled luminaires to allow three unique angles of illumination.



Model	CHIS-1 – Color Harmony Inspection System
Size (H x W x D)	100" x 66" x 44" / 254cm x 168cm x 112cm

Color Harmony Rooms

GTI will work with you to specify, design, and create a color harmony or color matching room that will enable you to simulate your customers' viewing environments with confidence. To deliver proper light intensity and uniformity over a large area, an optimized system of luminaires, viewing lamps, and accessories (neutral gray surrounds and mounting hardware) is required. We will combine the right components with our expertise to create a customized viewing environment that meets your requirements.



Vertical Color Matching Booth

The Vertical Color Matching Booth (VCMB) is an ASTM D1729-2009 compliant multi-source viewing system. With upper and lower luminaires it is the ideal choice for the visual inspection of colored objects. The VCMB includes GTI ColorGuard II for monitoring lamp usage, side walls to control ambient light, and heavy duty floor casters. Controls are mounted on both upper and lower luminaires.

Available light sources include:

- Artificial Daylight (D65, D75, or D50)
- Store Light (CWF or TL84)
- Home Light (Incandescent A)
- Optional Source (D50, 30U, TL84, TL83, Horizon, or LED)
- Ultraviolet Light



VCMB-64

VCMB Models

Model	VCMB-40	VCMB-52	VCMB-64
Viewing Area (W x H)	40" x 45.25" 102cm x 115cm	52" x 45.25" 132cm x 115cm	64" x 45.25" 163cm x 115cm

Vertical Product Inspectors

GTI's paper inspection system helps to eliminate costs associated with stock waste, rejections, and reworks. It combines multiple light sources with a Landsco light for optimal color and surface inspection of the paper or other materials.

The VPI/T viewing system is designed to help the textile industry evaluate textiles and apparel as per AATCC Test Method 9 and other AATCC test methods such as soil release, wrinkle retention, and more. The VPI/T light levels meet the specifications outlined by the AATCC.



Paper inspection system

Multi-Source Portable Desktop Viewer

The stylish and compact PDV-2e/M provides an ASTM D1729-2009 compliant desktop viewing station. It is ideal for client presentations, lab applications, and any business that critically views color.

Features include:

- Four light sources—D65, CWF (TL84 optional), Incandescent, and UV
- Elapsed time meter to monitor usage of the daylight source
- Operates on 100V–240V
- Unique hinged construction allows quick set-up and pack-up
- Side walls assure tight control of viewing environment
- Viewing area of 7.5" D x 19" W x 13" H (19 cm x 48 cm x 13 cm)



PDV-2e/M Multi-Source Portable Desktop Viewer in use (above) and folded (below)



Custom CMB Color Matching / Testing Booth

The custom booth shown here was built on our CMB design and then modified for precise optical testing. This unit includes upper and lower, multi-source luminaires which have four variable intensity light sources. Rear-wall light uniformity is further enhanced with the use of highly reflective side panels, creating an optimal surface for optical lens testing.



Color Rendition Demonstrator

The Color Rendition Demonstrator (CRD) is an educational and communication tool designed for demonstrating the effects different light sources have on identical color samples. The three-compartment viewer demonstrates color rendition of three varied light sources—fluorescent cool-white “store light”, 6500K fluorescent “daylight”, and incandescent “home light.” The CRD allows you to easily demonstrate and test how a color is affected by different light sources.

Model	Viewing Area of Each Compartment (H x W x D)
CRD-1	11" x 9.5" x 7.5" / 28cm x 24cm x 19cm



Simultaneous Color Viewer

The Simultaneous Color Viewer is designed to help detect metamerism and test color harmony by allowing a visual side-by-side comparison of colors under four different light sources. Standard light sources are daylight (D65 or D50), LED (3500K), store light (4100K CWF or TL84), and home light incandescent (CIE A). A UV light allows for the detection of optical brighteners, whitening agents, and fluorescent dyes and pigments. The spring loaded viewing platform allows for thicker materials, like carpet samples, to be easily viewed.



Neutral Gray Paint

Standard Gray Neutral 7 is a water-reducible vinyl latex for use in color viewing areas which require a Munsell N7/ gray surround as specified by the ATSM D1729-2009 standard. Neutral 5/ and Neutral 8/ gray paint is also available. All are available in gallons or pints.



LAMP MAINTENANCE AND SUPPORT

Supporting Your Systems

All GTI Color Matching Systems are manufactured and installed to the ASTM D1729-2009 standard. To maintain this level of accuracy a maintenance program consisting of relamping, cleaning, and measurement is required. GTI has designed two programs that make it easy for you to maintain your viewing stations.

GTI LiteSupport

LiteSupport is an audit and certification program designed to help you maintain your inspection systems to the ASTM D1729-2009 standard. With LiteSupport, GTI will conduct an on-site audit to determine the status of your inspection systems. We will then work with you to develop a relamping and maintenance program to bring all inspection stations into specification. Upon completion of a LiteSupport visit you will receive a Status of Color Viewing Facilities report which verifies viewer-to-viewer compatibility and compliance with the standard. Each qualifying Color Matching Booth will be certified to be in compliance with the ASTM D1729-2009 standard and receive a certificate of compliance from GTI.



All GTI Color Matching Systems are certified to be in compliance before leaving the factory. Our LiteSupport and Relamping programs are designed to recertify color matching stations at regular intervals in the field.



Relamping

A properly maintained visual color inspection system will result in quicker client approvals and fewer remakes. Regular relamping is easy, affordable, and a key component of maintaining the integrity of your color inspection system. Relamping should take place after 2,500 hours of use. GTI products equipped with the ColorGuard option will notify you when relamping is necessary. For viewing stations without ColorGuard a single shift operation should relamp once a year. To maintain viewing accuracy it is important that you use only GTI's ColorMatcher lamps and replace all lamps in the inspection station when relamping. GTI sells relamp kits for each product. Lamps are also available in quantities.



Certified Relamp Kits have been factory tested and come with a certification of meeting the ASTM D1729-2009 standard. Certified Relamp Kits provide a traceable verification of quality at a lower cost than a full LiteSupport audit.

ColorGuard II

Excessive lamp operating age is a common reason for variations and inaccuracies in visual color match assessment. GTI ColorGuard II is a solid-state monitor/memory system that tracks usage for each light source and notifies you when it is time to relamp.

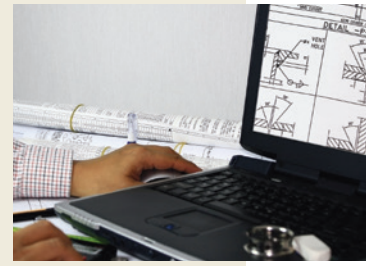




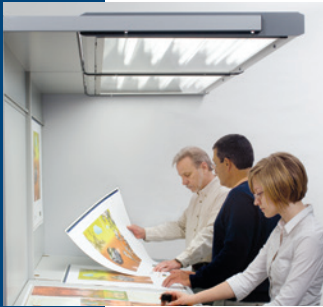
What is Your Requirement for Color Matching, Inspection and Aesthetic Appraisal?

If you have a need that can't be met with one of our standard products give us a call. We will work with you to define your requirements, develop a specification, and offer you a solution that will meet your requirements at a reasonable price. From innovative desktop products to full color harmony rooms and custom inspection stations, like the Color Harmony Inspection System, we can configure a product to meet your specific needs.

We are able to offer innovative and affordable custom configurations because the entire manufacturing process, from design to metal fabrication and painting to final assembly and inspection, takes place in our Newburgh, NY headquarters.



GTI Graphic Technology, Inc. is the leading manufacturer of tight tolerance lighting systems for critical color viewing, color communication, and color matching assessment. The company services the graphic arts and photographic markets. GTI also services many industrial and consumer segments including the ink, plastic, paint, colorant, automotive, fashion, textile, food, and retail markets. Since 1975, GTI has been designing and manufacturing Graphiclite Color Viewing Systems, CMLite Color Matching Booths, QElite Quality Engineering Systems, and a range of proprietary color viewing



lamps in its 30,000 square foot headquarters in Newburgh, NY. An in-house spectroradiometric laboratory and 100 percent measurement and verification production process guarantees that precision and accuracy is built into all products. The company also has offices in the United Kingdom and Germany. GTI's products

are available worldwide. GTI actively participates in numerous industrial and professional organizations and enthusiastically promotes education, research, and technology.

GTI's CMLite high quality D65 daylight products highlighted in this brochure are all designed to meet or exceed the ASTM D1729-2009 standard for visual color matching, inspection, and aesthetic appraisal. ASTM D1729-2009 specifies the equipment and procedures for visual appraisal of the colors and color differences of opaque materials that are diffusely illuminated.



GTI's Graphiclite® products comply with ISO 3664:2009, the international standard for viewing in graphic technology and photographic conditions. Our family of Graphiclite D50 daylight products includes small desktop systems, optimized pressroom viewing stations, large vertical wall systems, and soft proofing systems. To learn more about our Graphiclite D50 products visit our website or email us to request a brochure.



cmlite



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