# Ensuring Color Consistency in Every Corner of the Globe

With access to hundreds of color specialists, more than 20 regional color centers and an unrivaled local support network, Sun Chemical's global SunColorBox tools make it easier to achieve color accuracy.


## Introduction

A critical component of brand strategy, color is essential to brand recognition. At one level it helps consumers find their favorite products on the supermarket's crowded shelves; at another, it is an intrinsic part of the brand's "personality," telling us what the brand stands for and what we can expect from it.

The importance of color in marketing has been confirmed by consumer research on a number of occasions. For example, according to the Institute for Color Research, people make a subconscious judgment about a person, environment or product within 90 seconds of initial viewing, and between 62% and 90% of that assessment is based on color alone.

Similarly, a survey conducted by Xerox Corporation and International Communications Research[1] produced the following results:

- 92% believe color presents an image of impressive quality.
- 90% feel color can assist in attracting new customers.
- 90% believe customers remember presentations and documents better when color is used.
- 83% believe color makes them appear more successful.
- 81% think color gives them a competitive edge.
- 76% believe that the use of color makes their business appear larger to clients.

These results are also supported by research by the secretariat of the Seoul International Color Expo[2], which found that:

- 92.6% put most importance on visual factors when purchasing products.
- 84.7% think that color accounts for more than half among the various factors important for choosing products to purchase.

[1]Conducted by Xerox Corporation and International Communications Research from February 19, 2003 to March 7, 2003, margin of error of +/- 3.1%.

[2]Secretariat of the Seoul International Color Expo 2004.

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# Ensuring Color Consistency

As color plays such a critical role, it is essential that consumers see the same color on every version of the product, however it is packaged and wherever it is sold. Failure to control color consistently or to use too little or too much color can reduce brand impact, confuse customers and damage sales. But this is only one of the many challenges faced by brand managers and the converters and printers they work with. Other challenges include:

- **Many substrates, multiple channels—**The colors on pouches, bottles and boxes are printed on many different substrates using a range of processes. Each substrate responds differently to different inks, processes and lighting. Ensuring consistent color under all these conditions is a complex affair.

*The colors on packaging are printed on many different substrates using a range of processes. Whether it is a laminated pouch, folding carton milk container or various labels on a plastic tumbler for food packaging or plastic spray bottles, tubes or containers for household goods, each substrate responds differently to various inks, processes and lighting.*

- **More variety, shorter runs—**When U.K. supermarket ASDA (owned by U.S. retailer Walmart) decided to redesign its pet food ranges, they had to work across five packaging formats, including cartons, labels, bags and flow wraps and 345 SKUs. And before its competitor, Tesco, took action to reduce the number of products it sold, the supermarket had over 90,000 SKUs on its shelves.
- **Multiple product variants—**Today brand owners have to manage more and more product versions—a direct result of the way digital technology tells you more about customers' buying habits. The more you know, the more you can customize products to precisely target audiences and markets.
- **Agile, flexible supply chains—**Identifying new trends is just the beginning; brand owners have to respond to changes quickly, as well as to new initiatives from competitors. Supply chains must be agile and flexible, optimized to get new products on the shelves as quickly as possible—even when brand owners, designers and converters are spread around the globe.
- **Constant change—**If brands are always changing, spinning off new variations on a theme, then so is the environment they work in. Tighter regulation—reducing artificial colors and preservatives, for example—may mean new substrates or pigments. Switching a printing process, from offset to gravure, or flexo to digital, changes the game. New materials and technologies pose fresh new challenges.
- **Color perception—**Color plays an important part in conveying information, but remember that there are an estimated 200 million people worldwide who suffer from deficient color vision in one form or another. Some are simply color blind; others have age-related conditions such as glaucoma or cataracts. Packaging design needs to take account of this.

From these challenges, it's clear that brand owners are under constant pressure to streamline processes, introduce efficiencies, manage cost by eliminating waste and accelerate time to market.

But the bedrock of brand identity is color; if that isn't right, the integrity of the entire supply chain is compromised. So it follows that achieving consistent color across substrates, print processes and national frontiers is essential to the efficiency of the whole packaging workflow.

There are two major obstacles to this. The first is the number of variables that make true color consistency elusive—all those package types, substrates, inks and so on. The second is the number of parties with input to the production and approval of color. The universe of brand owners, designers and converters is vast and geographically spread—producing the 345 ASDA pet food SKUs mentioned earlier involved 20 printers.

While software and hardware tools for color management are available, they are often deployed inconsistently by the individual links in the supply chain. The result is a chain of disconnected islands of solutions, rather than a community working to an industry-standard reference, with every supplier looking at providing its own solution that works within its own environment, without the necessary integration needed for a highly efficient workflow. In practice, "color management" is often a mix of gut feel, operator experience and the inconsistent use of measurement tools and samples.

# Ensuring Color Consistency

Try to map the color management process in many packaging supply chains and the picture can be chaotic, with communication between the different parties often going around in loops of approval and re-approval. For brand owners, this is a recipe for error, inefficiency and unnecessary cost. It's no surprise that color that fails to meet brand owner expectations is the primary reason for rejects and reworks.

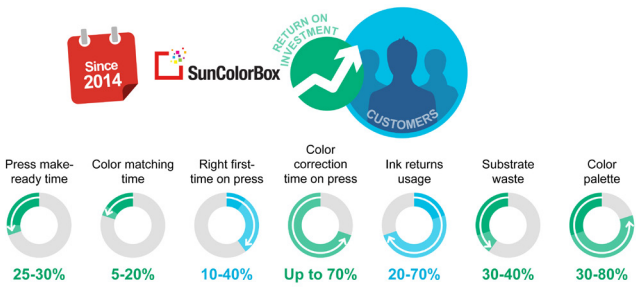
## Overview of SunColorBox

Sun Chemical is committed to innovation in inks, pigments and coatings and to working in partnership with leading color measurement, printing and converting technology developers. As a result, we have unrivaled experience working with companies in every link of the packaging supply chain, guiding brand owners from concept to converter to consumer, through a full range of solutions.

Focusing that experience on the issues of color management, Sun Chemical developed the SunColorBox, a unique set of tools and services that enables consistent and accurate digital color communication throughout the entire packaging supply chain.

Since 2014, Sun Chemical has been implementing the SunColorBox solution at a large number of customer sites around the world using all printing technologies, including flexo, gravure and offset, and has achieved the following substantial savings for customers:

- 25%–30% savings in press make-ready time
- 10%–40% savings from right first time on press
- 20%–70% increase in ink returns usage
- 30%–40% reduction in substrate waste
- 30%–80% color palette reduction




*Since 2014, customers who have implemented some portion of the SunColorBox solution have achieved substantial savings.*

Sun Chemical's patented technology[3] enables the communication of a consistent, digital description of the desired appearance of a product. Sun Chemical has licensed the technology to X-Rite to enable PantoneLIVE, the end-to-end color communication ecosystem that bridges the gap in digital color communication between brands/designers and their print, packaging or manufacturing supply chains.

A menu of added-value services, the SunColorBox offers every customer—whether printing spot color, CMYK or extended color gamut—a tool to manage colors and ensure their consistency. It allows each customer to select the most suitable services based on the size of their business and the investment required.

SunColorBox

SunConsulting SunDigiProof SunDigiGuide SunMatch SunColorQC Hardware & Software myColorCloud PantoneLIVE SunCMYK SunECG

The tools in SunColorBox comprise:

- **SunConsulting—**A custom site assessment and color audit.
- **SunDigiProof—**An on-site, on-demand, color-accurate inkjet swatch for flexible packaging.
- **SunDigiGuide—**A custom, digitally printed book of an individual customer's production colors.
- **SunMatch—**A color-matching and -validating software platform.
- **SunColorQC—**A color quality control software platform.
- **Hardware & Software—**A procurement service.
- **myColorCloud by Sun Chemical—**A cloud-based repository, using PantoneLIVE infrastructure, for customers' spot color libraries.
- **PantoneLIVE™—**A cloud-based architecture that enables digital specification and communication of Pantone standards to all stakeholders in the global supply chain.
- **SunCMYK—**A service to help printers and converters achieve the ISO 12647 standard for process colors.
- **SunECG—**A solution to address the growing demand from customers for expanded color gamut (ECG) printing by adding colors to the standard CMYK set.

[3]U.S. patent nos. 7,034,960; 7,202,976; 7,268,918; 7,417,764; 7,738,149 and their foreign equivalents.

# Ensuring Color Consistency

## Support

For a printer or converter who may have handled their color management in a certain way for the past 20 years or more, it is not always easy to accept the level of change required to implement a digital color management project. That is why at Sun Chemical we have developed our centrally managed but locally supported model, the quality and standard of which we feel really set Sun Chemical apart in the market.

We believe that there is no better person to implement a digital color management project for a customer than the person who has built a relationship with that customer, knows the challenges they face and can speak the local language. So, while our central color management team manages digital color management projects globally, the implementation and support are all provided by the local Sun Chemical technical support personnel.

Globally we now have more than 300 highly trained personnel, our SunColorBox specialists, with supporting links to our Color Centers, where PowerUsers have been trained in our digital color management procedures. We have more than 200 customers globally using tools from the SunColorBox.

In addition, we have created Color Innovation Centers in Sun Chemical Yate (UK), Charlotte (USA), Aliaga (Turkey) and Mexico City (Mexico). As we have a full digital color management workflow in place at each of these locations, we can run in-depth customer workshops and training events at which customers can gain hands-on experience with all the varied software and hardware in the workflow to understand how this can be applied to their business.

The ongoing support and training required to implement a digital color management project can be substantial, but we know the difference it can make to customers, so Sun Chemical approaches each project as a joint venture—we provide whatever level of support is required to reassure customers that they have made the right decision and to ensure that the project is completed successfully.

**Read some of the many comments we have received from satisfied SunColorBox customers.**


*Sun Chemical's team at the Aliaga, Turkey, Color Innovation Center.*

**If you would like more details about any of the tools in the SunColorBox, please contact Sun Chemical at globalmarketing@sunchemical.com.**



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# SunConsulting

## Deploying a Site Assessment and Full Color Audit

### Introduction

Although the digital evolution over the past 30 years has completely changed how we communicate, it's clear that, in the field of color management, the adoption of digital solutions has been sporadic. The level of color management continues to vary hugely between converters, even to the point that, in some cases, color on press is still evaluated by sight alone.

Some managers of larger brands may require converters to be PantoneLIVE™ enabled and to provide measurement data to prove that their production meets the criteria stipulated, but many will not make such requirements if converters are delivering products to a consistent standard. The problem comes when there is an issue with a color or a job is rejected—that's when questions start being asked about measurement capabilities.

Before recommending the deployment of any other specific tools in the SunColorBox, we first need to understand the status of your existing color management workflow. To do that, we carry out an exhaustive site assessment, the first part of our SunConsulting service.

The assessment is carried out by one of Sun Chemical's 300+ highly trained SunColorBox specialists all over the world. The specialist investigates how color is communicated and managed through each department—not just on the press, but in any and every prepress or origination department—and produces a holistic assessment report detailing what is required to put in place a digital color management workflow that fully complies with international standards.

As well as evaluating whether you could benefit from a more streamlined color management workflow, we may also identify an opportunity to help you achieve greater cost savings or efficiencies. If so, we can offer you broader business consultancy through our Business Improvement Team, who can map out and appraise your production/manufacturing processes and suggest improvements, using tools such as 5S, Lean Manufacturing and Waste Hunting.

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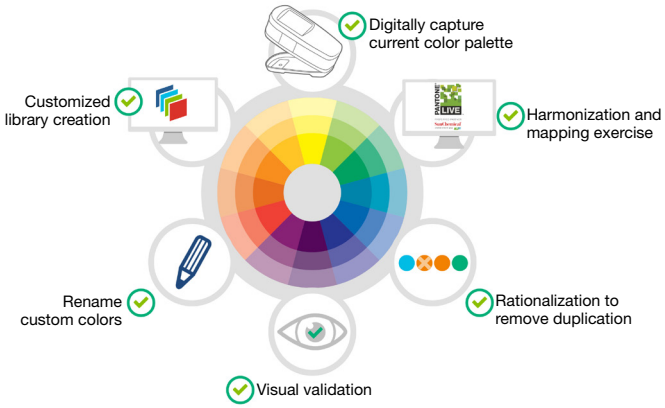
# SunConsulting

Having performed the site assessment, the SunColorBox specialist will then conduct a full color audit as the second part of the SunConsulting service. It's very easy for converters to have thousands of colors in their portfolio, because the many brands they supply each want their own specific color and, as converters don't have a system in place to check what colors they've previously created for brands, they go ahead and create any new color requested. This proliferation of created colors means an increase in ink inventory and in manual handling on site, and converters can end up storing thousands and thousands of different colors, many of which are very similar.




*Having performed the site assessment, the SunColorBox specialist will then conduct a full color audit as the second part of the SunConsulting service.*

So, to start the journey toward a complete, digital color management workflow and away from working with a physical color standard, a SunColorBox specialist will digitize your existing spot color portfolio (comprising signed-off production samples from press approvals) using a spectrophotometer under very controlled conditions, so that there's no variation or inconsistency in the process. The result is a digital palette of your spot colors that is then run through Sun Chemical's color audit process.

As the SunColorBox specialists often find that customers have multiple samples referencing the same color target, e.g., PMS 485C, the first part of the audit is to perform a harmonization exercise to ensure that the measured color is in fact in alignment with either the Pantone digital master or specific PantoneLIVE Dependent Standard Library, which will be based on a particular print process, including a specific substrate.

The specialist will then perform a rationalization audit within your required tolerance to identify color groupings and remove any duplication. For example, over time you may have printed 10 to 15 different, but very close, variations of a green, but when all those colors are compared with each other, it may be possible to identify one green as the median color.

Once the audit results have been confirmed with you—using both the digital data and a joint visual validation exercise—and you have agreed to retain just that one median green, which could have been used effectively for all 10 to 15 jobs for which a new color was created, the others can be removed. Any custom color in those dropped can then be renamed to give it a generic color reference name that no longer links it to a specific design, such as Coca-Cola red.

The final outcome is a set of customized, rationalized and substrate-specific digital libraries that can be hosted on cloud-based solutions and communicated throughout your supply chain, building the foundation for a complete color management workflow.

Sun Chemical has more than 200 active customer SunColorBox projects globally. Read Sun Chemical's statement about the importance of SunConsulting.

**If you would like more details about any of the tools in the SunColorBox, please contact Sun Chemical at globalmarketing@sunchemical.com.**

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# SunDigiProof

## Color-Accurate Inkjet Swatches Printed On Site and On Demand

### Introduction

We know that, as converters, you often face repeated requests to create multiple color swatches to send to your brand owner customers for approval. We also know that this manual process can be very time-consuming for you and, if there is no ink kitchen on site, can necessitate the requests being sent back to your ink suppliers to fulfil, which can cause delays in the color approval workflow.

To accelerate the process, save time and cut out the manual handling, Sun Chemical has developed a low-cost and easy-to-use application called Seine that enables you to produce SunDigiProofs—color-accurate inkjet swatches, printed onsite and on demand, for the flexible packaging market.

Using the latest Epson inkjet proofer and papers to simulate the gloss level of the final product (rather than printing on the actual production substrate), you can reproduce the manual process and create a digitally printed version of the physical standard that is exactly repeatable and has improved reliability over wet proofing.


*Rather than printing on the actual production substrate, using the latest Epson inkjet proofer and papers to simulate the gloss level of the final product, a digitally printed version can be created of the physical standard that is exactly repeatable and has improved reliability over wet proofing.*

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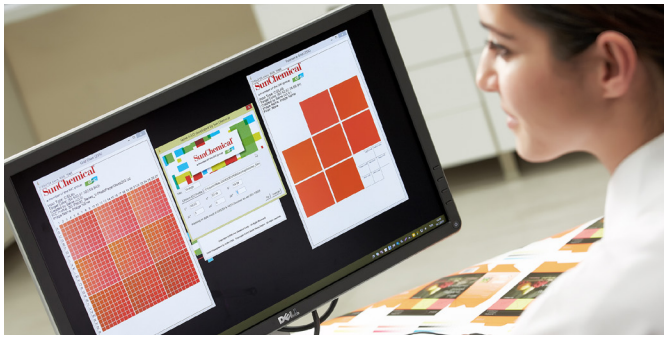
# SunDigiProof



*Sun Chemical has developed an easy-to-use application called Seine to produce SunDigiProofs. One of the features includes the creation of Munsell charts, which are a very effective way to visualize how a color varies in all directions of the color space around the standard.*


*For the metal decorating market, Sun Chemical, in partnership with CGS, can provide a solution to simulate the final product.*

For printing on paper and boards, Seine users can specify the desired level of texture to apply to simulate the appearance of the substrate. This adds to the visualization and helps customers' acceptance of digital prints when compared to a physical standard—we've previously had comments from customers that a digital print on a substrate other than the production substrate looks too good. Custom templates can also be created to include your logos, design details, etc., all adding to the professional presentation of the proof to the brand owner.

Seine also has a feature to automatically create Munsell charts, which are a very effective way to visualize how a color varies in all directions of the color space around the standard. You can set the level of variance around the points of the color space and decrease or increase the level based on the specific tolerance you wish to show to a brand owner.

For the metal decorating market, Sun Chemical offers an additional digital proofing solution. If you produce metal decorating applications, you previously had to provide brand owners with a manual wet proof if they wanted to see a proof of concept or mock-up sample of a beverage can. This was a costly process that also took time and effort.

Through Sun Chemical's partnership with CGS, whose ORIS Flex Pack software enables design contract proofing, and the use of a Roland digital inkjet printer, you can now print either on a metallic proofing substrate to simulate the metal decorating final product or on a clear film that can be wrapped around a piece of production metal decorating substrate.

The resulting digital proof is therefore quickly produced and verified as an achievable target, accelerating the color approval process.

Sun Chemical customers who have used SunDigiProof include VPK Netherlands.

**If you would like more details about any of the tools in the SunColorBox, please contact Sun Chemical at globalmarketing@sunchemical.com.**

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# SunDigiGuide

## A Digitally Printed Book of an Individual Customer's Production Colors

### Introduction

We know that the proliferation of spot colors in your portfolio can be an ongoing issue, especially if you've yet to implement a digital workflow and all you've had before is a Pantone book and some production samples.

By implementing our SunConsulting color audit, Sun Chemical can help you take control of your portfolio by first rationalizing your spot colors—perhaps from 2,000 down to 500—and creating a digital color palette of the retained colors. To make your own customers, the brand owners, aware of the full range of spot colors in the consolidated portfolio, you will then want to communicate that final palette of realistic, achievable colors to them.

To enable you to do this, we can provide you with a SunDigiGuide, a handy, digitally printed book (very much like a Pantone book) produced within very tight tolerances and customized to your exact requirements, including substrate rendering, texture, company logo, tonal chip, etc.

You then have a customized, professional way of communicating your production palette to your brand owner customers to accurately clarify what is achievable based on their printing process.

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# SunDigiGuide


*An example of a SunDigiGuide, a digitally printed book of brand spot colors produced within very tight tolerances and customized to customer requirements.*

As the SunDigiGuide shows brand owners the full choice of the spot colors they already have at their disposal, they are less likely to unnecessarily request the creation of a new color standard, often a time-consuming process.

By promoting the reuse of existing colors as much as possible, the SunDigiGuide prevents any delay in the launch of a new product that might otherwise be caused by a lengthy color approval process. It also means that you don't unnecessarily need to add additional colors to your palette or hold more ink inventory on site.

Sun Chemical customers who have used SunDigiGuide include East Riding Sacks.

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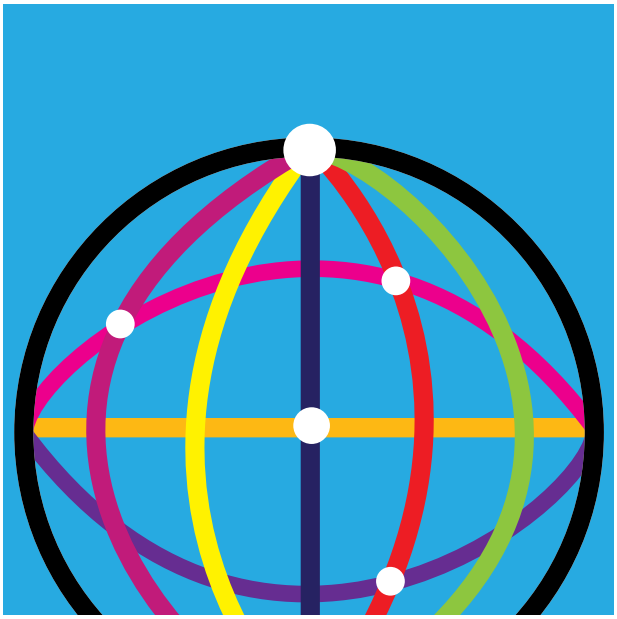
# SunMatch

## A Color-Matching and -Validating Software Platform



### Introduction

Historically, color matching has been a manual process that has very much relied on an individual's expertise and skill—as well as their subjective perception—to create a color formulation that would be the correct fit for your customer's requirements. However, due to a number of operational demands, we know that reliance on such a process is becoming increasingly challenging.

For example, many printing facilities, especially the larger ones, now have an ink kitchen with a stock of all ink bases on site, where colors can be matched immediately on demand, the ink formulated and then sent directly to the press without the need for an external supply from an ink vendor.

What's more, the big multinational converting groups need to be flexible enough to move their production around, but to do that, they have to know that every site is printing to the same standard to deliver a consistent product to their customers.

*Many Sun Chemical color centers and customer printing facilities now have an ink kitchen stocked with base inks on site, where colors can be matched immediately on demand.*

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# SunMatch

To help customers address these challenges, Sun Chemical has launched a web-enabled, color-matching platform, SunMatch, which provides you with an objective and consistently accurate ink formulation capability. SunMatch gives you access to a best-in-class, color-matching software, which is hosted on the Sun Chemical network, so you don't need to invest in the full suite. Depending on your individual production specification, you can then predict and confirm that an ink formulation is correct before sending it to the press. This minimizes any downtime on press for color correction, which, in turn, greatly improves productivity and reduces waste and approval time for new jobs.

SunMatch can also help you to manage press returns—ink that is left over from previous production jobs, sent back and just left on the shelf. The software can measure the quantity of the return from the press and gradually include that in new formulations, thereby using up the redundant or slow-moving stock sitting on the shelf. SunMatch therefore enables you to make use of all the inks available, so it's not always necessary to make up fresh ink, saving both cost and space.

The SunMatch platform offers you many other additional benefits. Hosting your digital palette of colors in a central location means that ink kitchens at other sites within your group can instantly access the same digital color target data and formulate to one point of reference. This gives you the flexibility to centrally manage your digital color palette, while moving production around and still being confident that the end result will be consistently the same.

As Sun Chemical hosts SunMatch, there is also no need for you to develop your own costly IT infrastructure to support a similar global solution, nor is there any requirement to purchase upgrades, as Sun Chemical also keeps the software fully up to date.

Through our SunColorBox specialists, Sun Chemical supports the setup of SunMatch for customers and conducts extensive onsite training to ensure that you are comfortable with it.

As SunMatch has been our own color-matching platform of choice for a number of years, customers benefit from all the experience, knowledge and best practices developed by Sun Chemical in implementing this solution on a global scale. Post-installation, we will, of course, continue to meet your support needs.

Sun Chemical customers who have used SunMatch include the NAI in-plant project.

*Sun Chemical has launched a web-enabled, color-matching platform called SunMatch to provide consistently accurate ink formulation capability at all customer sites.*

**If you would like more details about any of the tools in the SunColorBox, please contact Sun Chemical at globalmarketing@sunchemical.com.**

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# SunColorQC

## A Color Quality Control Software Platform

### Introduction

Many factors, including age, gender and inherited issues such as color blindness, affect how we perceive color to the extent that we all see colors differently. When a print job has been rejected based on color, we know how challenging it has been for converters to prove that their production conformed to the standard and tolerances agreed upon with their customer.

Approving color on press and validating production have predominantly relied on the subjective opinion of a single individual, be that a press operator, shift manager or customer attending a press approval of a new design. The bottom line is that press approvals without an agreed upon, objective and measurable standard can cost valuable production time—and money—both for you and for your brand owner customers.

It's therefore in the interests of all parties to move color approval from a subjective to an objective process. Sun Chemical can help you to achieve this transition by giving you an on-press quality-control capability in the form of SunColorQC, a software platform.

As SunColorQC is hosted on the Sun Chemical network, by using the software and a connected spectrophotometer, the quality of the output can be measured on the press—irrespective of wherever it is—and validated against your customized color library already held digitally on the Sun Chemical network.

This color data will have been previously uploaded as part of SunConsulting, our customized site assessment and color audit service and generally the first tool in the SunColorBox we deploy for customers.

# SunColorQC

As well as providing quality-control reports, the software will also indicate whether, with the current ink mix in the press, the color can continue to be achieved within your specified tolerance. If not and the color needs to be adjusted, SunColorQC will offer guidance on how to adjust the color, whether by adding another color or just by making the current color on press either weaker or stronger.

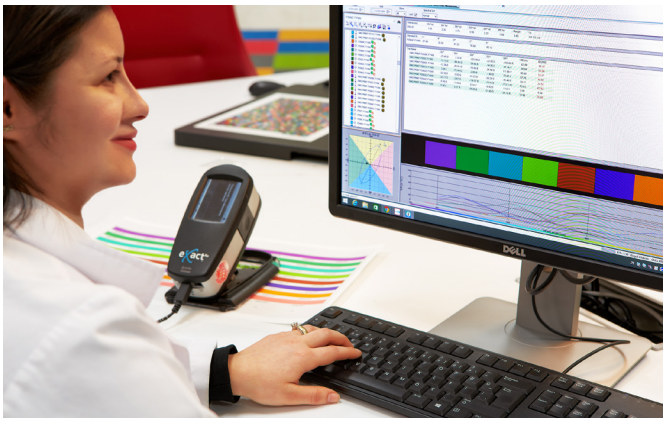
The SunColorQC platform offers other benefits. Hosting your digital palette of colors in a central location means that the production presses at other sites within your group can instantly access the same digital color target data.

This will give you the flexibility to move production around and still be confident that the end result will be of the same production quality. What's more, as we host the SunColorQC software, you don't have to invest in the development of a costly IT infrastructure to support your own global solution.

Appreciating the fact that the use of quality-control software may be a significant culture change for you, SunColorBox specialists will work closely with your press operators to set up SunColorQC and will conduct extensive on-site training to ensure they are comfortable with the software and that best practices are followed to optimize the system's performance. We will also continue to provide support after the installation, if required.

SunColorQC is not a replacement for the carefully honed color perception skills of press operators, but is instead a supplementary tool with two key benefits: first, it enables press operators to achieve the required color quality results quicker and more consistently and provides objective corroboration of their actions; and second, it instils confidence in your brand owner customers that you are continuing to invest in their relationship by adopting technology that will minimize the risk of delivering incorrectly printed packaging.

Sun Chemical customers who have used SunColorQC include Monteiro Ribas.



*SunColorQC is a software platform hosted on the Sun Chemical network that uses software and a connected spectrophotometer to measure the quality of the output on press.*

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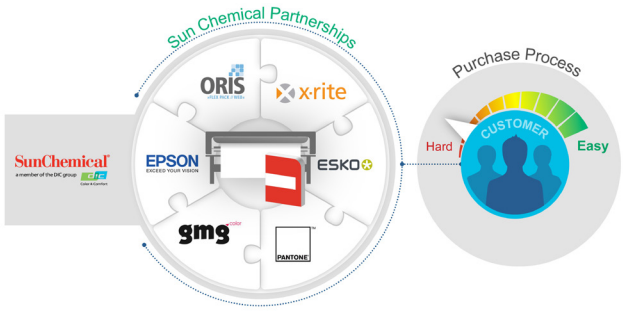
# Hardware and Software

## The SunColorBox Procurement Service




*Sun Chemical can leverage its partnerships with key graphic arts supply chain vendors to get the best deal possible for color management products, making the purchasing process for customers considerably easier.*

### Introduction

For Sun Chemical customers who decide to take advantage of the benefits of SunColorBox to help them to establish a consistent, objective color management system, the process begins with SunConsulting, our customized site assessment and color audit service. By deploying this service, we can establish how your current workflow operates and then propose a digital color management solution that meets your individual needs. As the solution proposed is likely to comprise a variety of hardware and software from multiple vendors, we offer a value-added procurement service to make the purchasing process of any color management equipment required for the project as easy as possible for you.

We can act as your single point of contact with key graphic arts supply chain vendors, such as X-Rite/Pantone, Esko, GMG, CGS and Epson, and in most cases can leverage our partnerships to obtain the best deal possible for you for color management products.

**If you would like more details about any of the tools in the SunColorBox, please contact Sun Chemical at globalmarketing@sunchemical.com.**

SunColorBox

SunConsulting | SunDigiProof | SunDigiGuide | SunMatch | SunColorQC | **Hardware & Software** | myColorCloud | PantoneLIVE™ | SunCMYK | SunECG



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# myColorCloud by Sun Chemical

## A Cloud-Based Repository for Customers' Spot Color Libraries

### Introduction

While some converters may not have a digital color standards library at all, for those of you that do, the challenge is keeping this data up to date, managing any changes and communicating the data to the other sites within your group and back through the supply chain.

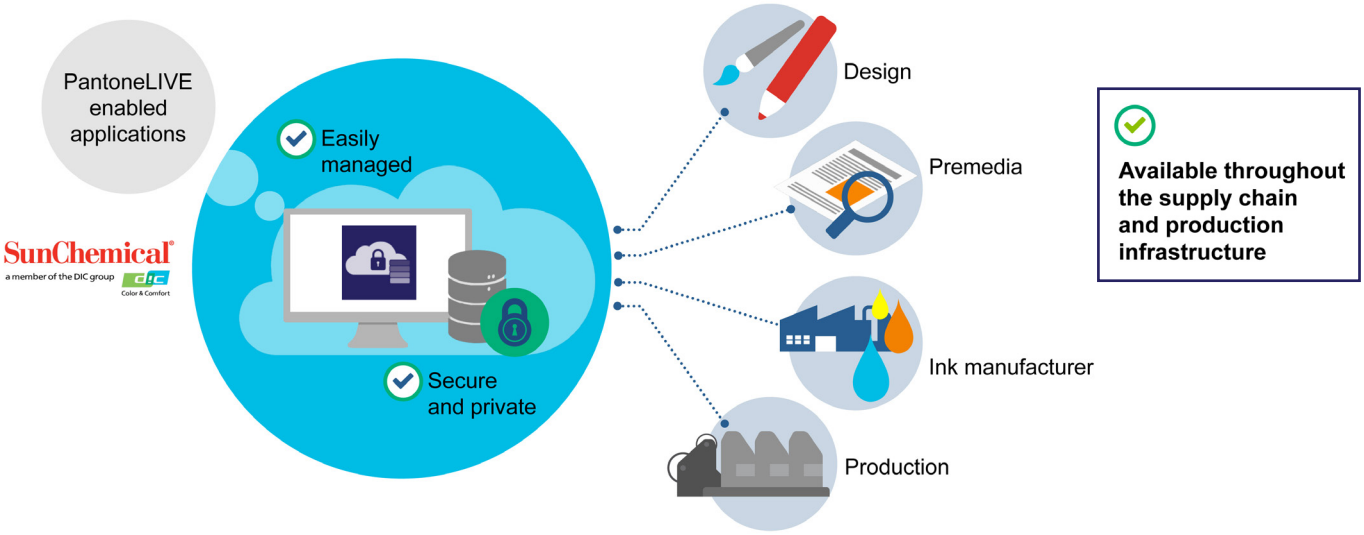
SunColorBox offers a solution to this challenge in the form of myColorCloud by Sun Chemical. A private, cloud-based system that uses the PantoneLIVE infrastructure, myColorCloud is the ideal host for a customer's customized digital library of spot colors.

Each library is created during the audit service conducted as part of SunConsulting, the first tool deployed from the SunColorBox. We will harmonize some of your colors over to PantoneLIVE and then, for any that don't match a PantoneLIVE color, we'll create a customized library of those colors for you in myColorCloud. Once your spot color database has been uploaded to myColorCloud, your spot colors can be accessed throughout your entire graphic arts supply chain.

If, as a converter, you'd previously wanted to add a new color to your digital database, the process might have involved going first into your ink formulation and adding it there, then going into your quality-control software and updating that library, and then possibly even going to your prepress software and updating that digital library too.

**working for you.**

# myColorCloud by Sun Chemical




*A private, cloud-based system that uses the PantoneLIVE infrastructure, Sun Chemical's myColorCloud is a host for a customer's customized digital library of spot colors, which can be accessed throughout the entire graphic arts supply chain.*

Now however, if your color database is hosted on myColorCloud, any change to that digital database will be immediately communicated throughout your whole supply chain. So if you want to add a new color to your digital database, by making the change in myColorCloud, the new color will be immediately available to all of the other PantoneLIVE-enabled hardware and software in your supply chain.

By communicating upfront which production spot colors are achievable, you can set clear expectations with your customers, resulting in less rework for colors and speeding up the costly, time-consuming color approval process. With regards to security, you also have complete control over the administration of your individual library in myColorCloud—each digital color standards library is private and secure, and each customer can choose exactly who has access to it.

Sun Chemical customers who have used myColorCloud include Folmex.

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# PantoneLIVE™

## A Cloud-Based Architecture Enabling Digital Specification and Communication of Pantone Standards to All Stakeholders in the Global Supply Chain

PANTONE LIVE™

PREFERRED PARTNER

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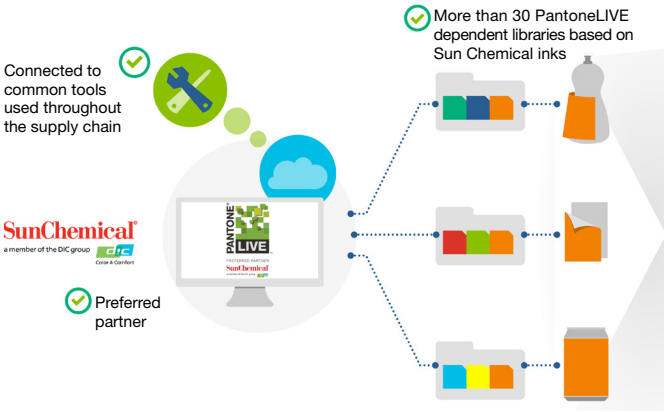


### Introduction

Traditionally the supply chain's reference point for spot color specification in the packaging industry has been the physical Pantone book, containing printed reproductions of spot colors. However, while the book has always been marketed as a guide to colors, over time it has unfortunately become viewed as the de facto industry standard when communicating colors.

The printed Pantone book is produced in an offset process on paper and so, in many cases, it is not a close enough representation to how the final packaging product will be printed. When the print process and substrate type are therefore taken into account, the expectations of brand owners and designers concerning an achievable color could still be set incorrectly. And if the Pantone reference cannot be achieved because of the print process and substrate combination, an interpretation of the best match is made, but based on a subjective, individual opinion, which can also result in an undesirable outcome.

For example, if a brand owner wishes to print the same product at two different converter locations and specifies a Pantone reference that is not achievable for that particular print process and substrate type, the subjective interpretation in each location could lead to a color variation in the same product on shelf. As the variation could be perceived by consumers as a quality issue, the integrity of the brand could consequently be damaged.

Having recognized this ongoing issue, Sun Chemical has collaborated with other market leaders—Pantone, X-Rite and Esko—to provide PantoneLIVE, a cloud-based architecture that enables digital specification and communication of Pantone standards to all stakeholders in the global supply chain. With centralized digital color standards and spectral values, everyone accesses and utilizes the same Pantone color libraries, creating unsurpassed color consistency and a new way to manage and communicate color.

*PantoneLIVE is a cloud-based architecture that enables digital specification and communication of Pantone standards to all stakeholders in the global supply chain, avoiding color inconsistencies across the globe.*

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# PantoneLIVE™

Together with Pantone and X-Rite, we have taken one master Pantone book, measured it with a spectrophotometer and created a digital version with values that will never change. Then, based on real inks and real substrates and printing under real production conditions, we have similarly created more than 30 PantoneLIVE dependent libraries covering the most common print processes and substrate types used in the marketplace today. Sun Chemical, as a partner, is committed to adding new libraries and expanding the existing ones as they are updated with new colors.

Hosted on the PantoneLIVE Cloud, the dependent libraries can be accessed through workflow and production software from companies such as Adobe, Esko and GMG, so that it's possible for everyone in the supply chain—brand owner, designer, prepress, ink manufacturer and printer or converter—to work to a consistent digital standard.

A further benefit is that the PantoneLIVE dependent libraries not only contain the solid measurement data for a color, but also its tonal breakdown information.

As packaging design becomes more complex to catch consumers' attention, there is a definite trend on some packaging to use a spot color for a vignette effect, in which the concentration of the color slowly fades from 100% to 0%. Whereas the gradient of the spot color cannot be predicted using a traditional Pantone reference that only contains the solid color information, the tonal information available in PantoneLIVE provides benefits throughout the supply chain:

- Designers can see spot color gradients in their artwork using the PantoneLIVE ColorBook and Adobe Illustrator Viewer.
- Prepress can accurately create a full digital contract proof for color approval through PantoneLIVE-enabled software from Esko, GMG or CGS.
- Ink manufacturers can formulate to the desired PantoneLIVE dependent standard in X-Rite Ink Formulation software.
- Printers and converters can control the quality of production using X-Rite Color iQC, ColorCert and other common quality control software packages.

With every party working to one achievable point of data—a digital standard hosted on a cloud-based system—considerable time and effort can be saved, shortening the color approval process and meeting your customers' expectations.

Sun Chemical is best placed to implement, support and supply PantoneLIVE colors due to its network of global color centers being PantoneLIVE enabled.

Licensed under Sun Chemical Corporation, Sun Chemical's patented technology enables the communication of a consistent, digital description of the desired appearance of a product. (U.S. Patent Nos. 7,034,960; 7,202,976; 7,268,918; 7,417,764 and their foreign equivalents.)

Read Pantone's statement about how Sun Chemical's partnership with Pantone has added value to customers who have used PantoneLIVE.

**If you would like more details about any of the tools in the SunColorBox, please contact Sun Chemical at globalmarketing@sunchemical.com.**

SunColorBox

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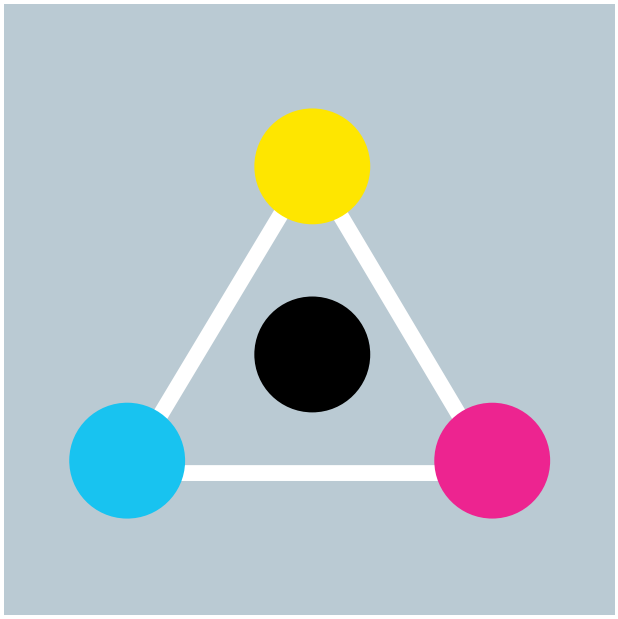
# SunCMYK

## A Service that Helps Printers and Converters Achieve the ISO 12647 Standard for Process Colors



### Introduction

With the retail environment more competitive than ever, packaging designs are increasingly including eye-catching illustrations, pictures or overprint elements to attract consumers' attention and their disposable income.

The colors, such as those used for the skin tone of a person in an illustration, are commonly replicated on the product packaging by using ink percentages of the four process colors (cyan, magenta, yellow and black) on the press, rather than a spot color premixed to match the color in the design.

ISO 12647 was created as an industry standard for everyone in the supply chain to reference and target for the process colors with the aim of ensuring consistent printing conditions so that work becomes repeatable across presses or even sites within a company and that, if produced by different printers, the same job will be printed in a consistent way.

As a result, if a designer working on an illustration applies this standard to the elements in their artwork file, the prepress can generate digital contract proofs as targets for approval.

Plates or cylinders can be cut to the percentages of each process color required to achieve the illustration, and the converter can work toward the same values so the desired result will be achieved with minimal downtime for color on press.

However, we understand that achieving the required ISO standard can be a challenge for printers and converters due to the many variable factors around the production process, including the stability and age of the press, together with the potential for variation in plates, aniloxes and cylinders.



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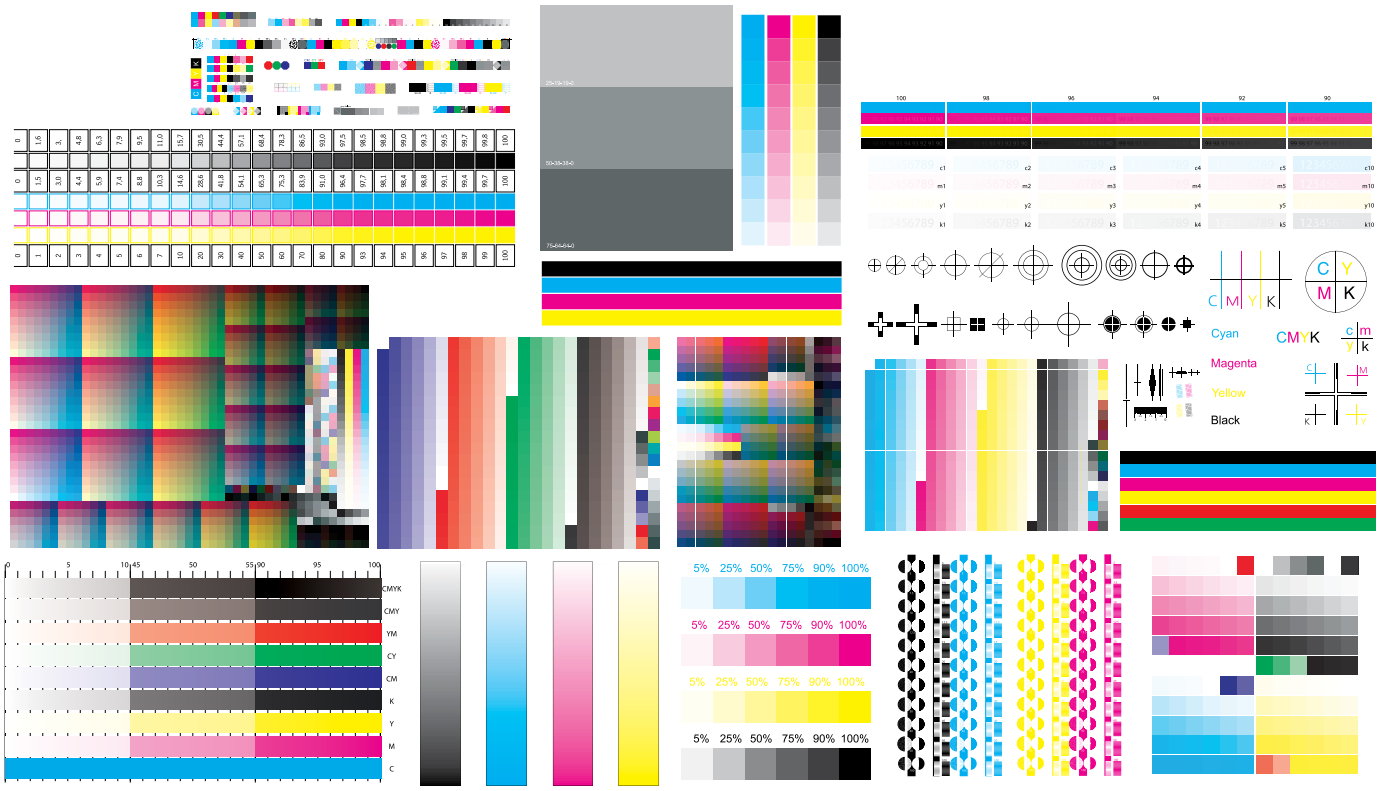
# SunCMYK




We have therefore developed SunCMYK, a Sun Chemical service to assist printers and converters to achieve the ISO 12647 standard. Trained by the FOGRA, UGRA or G7 governing bodies to certify printers and converters to ISO 12647, our highly qualified professionals can evaluate the current status of your printing environment and implement the correct controls, processes and procedures to ensure that you will achieve certification or, if preferred, confirm your compliance with the ISO standard.

For converters that print onto metal substrates, there is currently no equivalent standard. However, Sun Chemical is participating on the ISO committee that's creating such a standard for metal decorating. Sun Chemical will lead this initiative and guide the industry toward this standard.

Sun Chemical customers who have used our SunCMYK service include Offset Print & Packaging, John Good Printers and ASG Europe.

**If you would like more details about any of the tools in the SunColorBox, please contact Sun Chemical at globalmarketing@sunchemical.com.**

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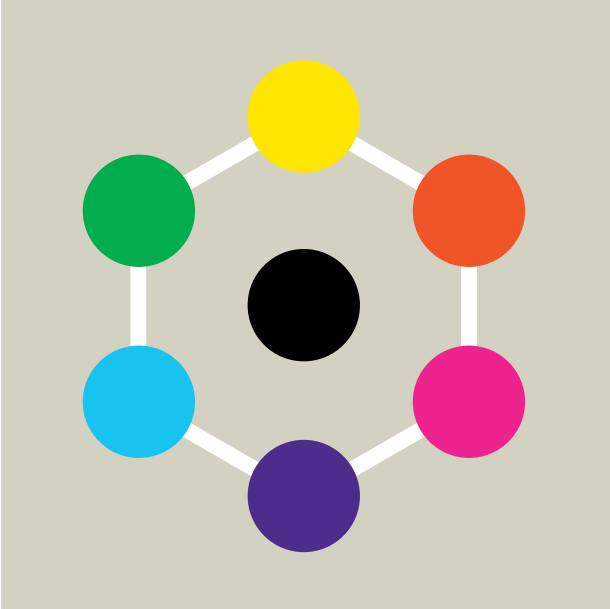
# SunECG

## A Solution for Customers Using Expanded Color Gamut Printing



### Introduction

A spot color is traditionally printed as an individual color on the production press, with the specific color matched by mixing individual color base components and then delivered to one station of the production press for printing.

A second method of replicating the desired color on press is by using process colors. In this scenario, the color is achieved by overprinting a combination of the process cyan, magenta, yellow and black inks as the substrate passes through each of the four units on press. However, because more than just one unit/station on the press has to be controlled, there is a greater risk that issues will arise, as any movement or variation on any of these units will affect the final, built spot color.

A further issue is that the gamut of colors that can be achieved by using a combination of four process colors is limited and may therefore not achieve the brand owner's desired color.

To try to increase this gamut, the industry has looked at adding up to three additional colors (orange, green and blue or orange, green and violet) to the process set or having a unique seven-color set. In essence, the more colors that are available to choose to overprint, the more built colors that can be achieved. A number of initiatives, such as Hexachrome and Opaltone, have been developed, but none have achieved industry acceptance or become an industry standard.

With a view to establishing an industry standard, Sun Chemical is now working with Esko, the leading supplier of prepress software, to offer printers and converters a seven-process-color solution. We start by taking you through an audit process to ascertain the status of the presses and processes you have in place and to ensure your process control is of sufficient quality to enable you to run expanded color gamut (ECG) printing successfully.

# SunECG

Assuming we're able to validate the press' stability and repeatability, we will then supply an ECG ink set and run what we call a "press fingerprint" on the press.

The press fingerprint exercise will print out many different combinations on overprints, which can then be measured with a spectrophotometer and fed back into the Esko Equinox system, where an ECG profile is created. You can then specify the spot color required and Equinox will reference that profile and state the exact percentage required of each of the seven colors to achieve the desired solid color.

For printers and converters able to take advantage of ECG printing, the benefits are significant, as there is no need to change inks on the press because all of the work is being done in the prepress separation to ensure that the color required is built up across each print station.

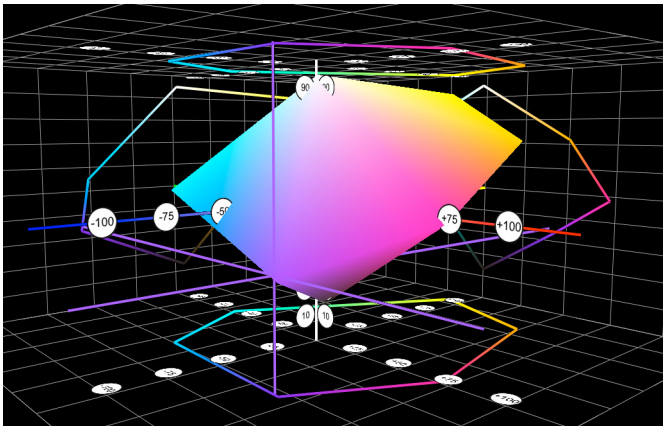
Since the seven inks can be left in the press, the changeover and make-ready time for each new job is greatly reduced, delivering substantial cost savings. Multiple designs can also be consolidated across one web/sheet, so there is no need for individual production runs for different jobs.

An optional benefit of an enhanced color gamut can also be gained in photographic image areas of the print, provided the artwork is still in the original RGB format and has not been compressed to comply with a standard ISO 12647 workflow.

Sun Chemical is developing tools for converters to access their process capabilities to understand the benefits of converting from spot color to ECG printing.

Get more information on customers who have benefited from Esko Equinox*.

*Esko and Equinox are registered trademarks of Esko-Graphics BVBA.




*Sun Chemical has several tools to offer printers and converters a seven-process-color solution. After validating the press' stability and repeatability, Sun Chemical would supply an ECG ink set and run a "press fingerprint" on the press that includes measurement with a spectrophotometer.*

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