

COLOUR

n
the sensation produced
by rays of light of different
wavelengths, a particular
variety of this



Ethical:
aware-
ness/
reflect-
ion/
debate

ava
academia

BASICS

DESIGN

Gavin Ambrose
Paul Harris

C5

COLOUR

Ethical:
aware-
ness/
reflect-
ion/
debate

ava
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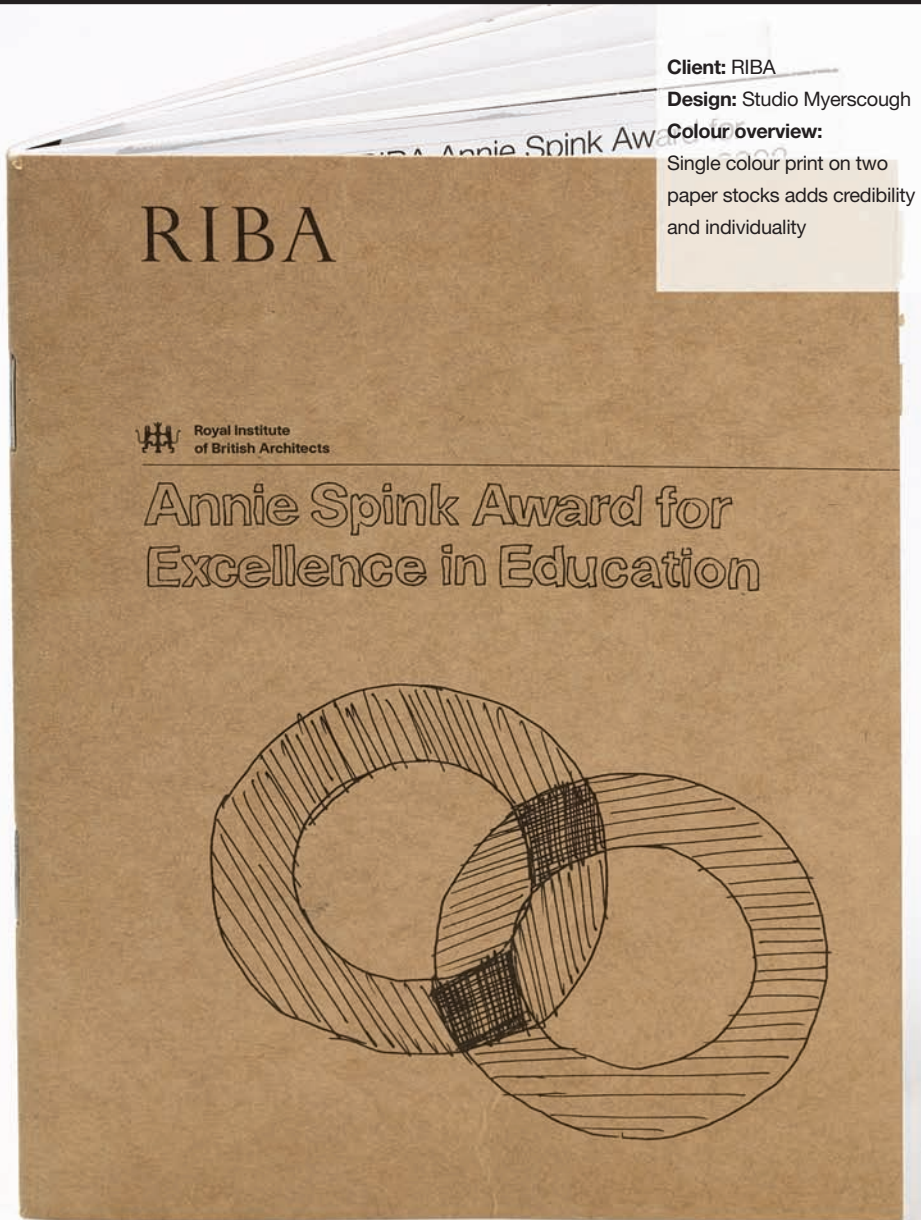
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RIBA: Annie Spink Award for Excellence in Education

This brochure was created by Studio Myerscough design studio for the Royal Institution of British Architecture. It is printed in one colour on a white paper stock, but the addition of a manila cover stock adds variety and interest. The single colour of the cover design enforces the impression that the typography and images have been hand drawn in pencil.

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Research Studios



North



Gavin Ambrose

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Form Design



Intro



Bis

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Introduction

Colour is the most immediate form of non-verbal communication. We naturally react to colour as we have evolved with a certain understanding of it, partly because the survival of our ancestors depended on it with regard to what to consume and avoid. Colour is used to represent thoughts and emotions in a way that no other element of design can, and it can act as an instant attention grabber whether in print, on screen or on a supermarket shelf. As such, colour is an important facet of contemporary design. We all, inherently, have preferences that inform our decisions when dealing with colour, and we are subject to all the cultural norms and understandings of colour usage that surround us.

The relative cheapness of four-colour printing means that colour is used for even the simplest print jobs. While serving a decorative function, colour also helps to isolate and identify distinct pieces of information and therefore is a key tool for initial information processing. Colour can be used to present strong graphic statements or provide more subtle support. Whatever the purpose, successful colour usage requires an understanding of colour systems, how these can be used, and the meanings that can be associated with the colours themselves. This book provides a background to these areas so that the designer can make informed colour decisions.

The Basics

This section provides an introduction to the basic principles and terminology of colour theory, including how colour works, the colour wheel, and different colour schemes.

Colour Systems

Here we introduce and explain the colour systems that a designer will use, including the variations between RGB and CMYK, as well as the different requirements for screen, web and print designs.

Using Colour

Colour can be used in many ways in graphic design. This section explores basic colour usage methods including four-colour printing, the use of tints and surprints, ink trapping, tones and gradients, and special colours.

Techniques

More experimental colour usage can be achieved through the use of a variety of techniques. This section looks at ways to colour images by altering values such as hue, saturation and contrast, and manipulating colour curves.

Colour Symbolism

Different colours have different cultural and emotional meanings that vary depending upon where you are in the world. This section explores what various colours mean and how they relate to emotions, which enables a designer to colour code information.

Colour in Practice

Colour can be used to impart specific information, this section explores some of the cultural meanings and symbolism that make colour such a strong communicator of important content.



Client: Haunch of Venison

Design: Spin

Colour overview:

Attention grabbing

colour combination

juxtaposed with minimalist

white-on-white printing

Haunch of Venison

This invitation by Spin design studio for a Rachel Whiteread exhibition, at the Haunch of Venison Gallery, has a simple and playful feel due to the clever use of colour. The garish treatment given to the artist's name, whose orange letters clash with the pink background they are set against, draws attention to the spartan message that comprises a name and a date. This loudness of the invitation contrasts with the minimalist outer envelope upon which the word 'invitation' is barely noticeable as it is printed white-on-white.

Minimalist

Minimalism was a school of abstract painting and sculpture that came to prominence in the late 1960s, which emphasised extreme simplification of form. It is non-representational and characterised by a severely restricted use of visual elements such as colour.

How to get the most out of this book

This book introduces different aspects of colour design via dedicated chapters for each topic. Each chapter provides numerous examples of creative colour use in design from leading contemporary design studios, annotated to explain the reasons behind the design choices made.

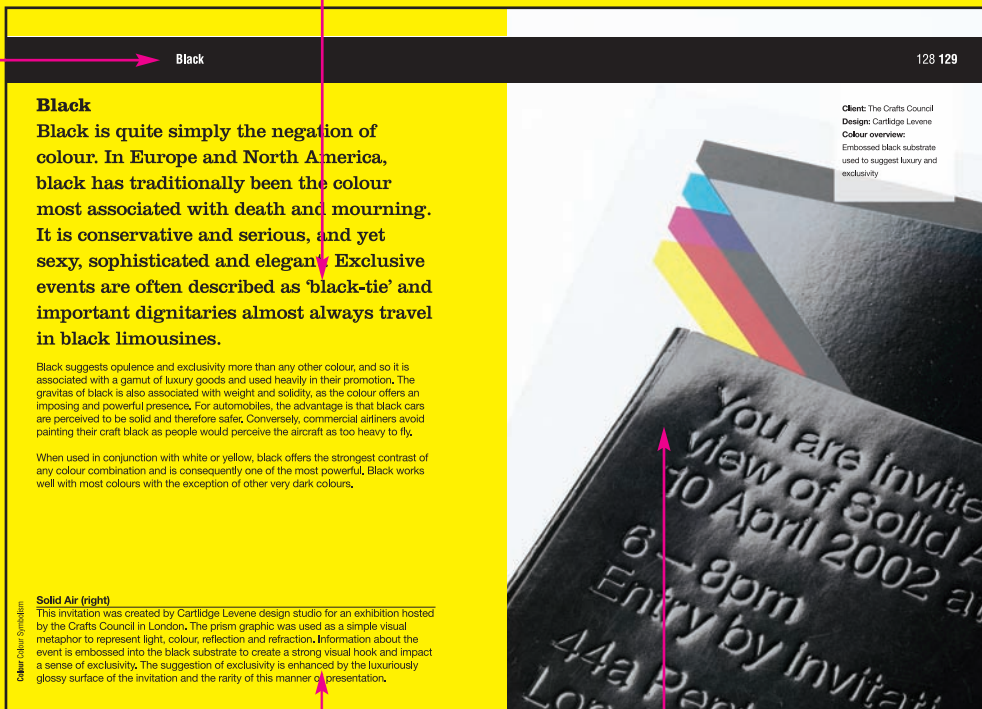
Key design principles are isolated so that the reader can see how they are applied in practice.

Clear navigation

Each chapter has a clear strapline to allow readers to quickly locate areas of interest.

Introductions

Special section introductions outline basic concepts that will be discussed.



Written explanations

Key points are explained within the context of an example project.

Examples

Commercial projects from contemporary designers bring the principles under discussion alive.

Additional information

Clients, designers and colour overview principles are included.

Diagrams

Diagrams add meaning to theory by showing the basic principles in action.

RGB
34 35

RGB
Red, green and blue are the additive primaries that correspond to one of the primary colours of light. Colour reproduction on a television screen or computer monitor is achieved via the RGB colour system.

A designer generally captures, designs and manipulates an image using the RGB colour system. If the design is to be printed, it is converted to the CMYK colour system upon completion, which is required for the four-colour printing process. As the CMYK colour system has four colours (rather than three), the file size increases. Equally, a design that is to be printed using the Hexachrome system will be even larger. If the design is to be posted on a website or other form of electronic media it will remain in the RGB system.

To ensure that colour will reproduce as intended, the monitors and output devices that a designer uses to produce work need to be colour calibrated.

These nine images show the four boards of the CMYK system (top), which work with a white background, and the two boards of the RGB system (bottom), which work with a black background. Design systems convert the colours of the original image file, and this means that necessary conversion from RGB to CMYK for four-colour printing will not result in any loss of colour quality.

Xavier Young
 Each of these 12 pages features a 1:1 colour photograph that is set against a black background, into which white text has been reversed out. Websites and other electronic media are typically produced in the RGB colour system.

Paper stocks
60 61

Paper stocks
The use of different coloured paper stocks provides an often overlooked method that will add colour to a design, particularly one that would otherwise be monotone.

Paper stocks are available in numerous colours and this provides a designer with great versatility and the creative potential to combine many different types. When printed, all but the darkest colour stocks can retain text legibility.

Stock selection can have a dramatic impact on colour reproduction. Some stocks are very absorbent and as such give dull colours, whilst others have coatings that are designed to give high-quality colour reproduction. This book uses gloss-, uncoated-, and kraft-paper stocks, all of which produce different colour reproduction results. The table below outlines the suitability of different stocks for colour printing.

Stock	Characteristics	Colour reproduction	Use
Uncoated or other	Highly absorbent, which means sharp colour images are difficult to reproduce	Good, but limited if sharp images are required	Magazines
Matt	Coated stocks that have a dull surface	Excellent, flat colour with low glare, ideal for photorealistic images	Magazines, flyers, brochures, catalogues
Silk/lustr/semi-gloss	More coating than matt but less than gloss stocks	Excellent, low glare, ideal for photorealistic images	Magazines, flyers, brochures
Gloss	Coated paper with a smooth and high-white gloss surface	Excellent, ideal for reproducing bright colour	Staple of magazine production, brochures
Cast-coated	Heavy, clay-coated stock. Pressed (or cast), while still wet against a polished hot metal drum to produce a high gloss finish, usually on one side of the sheet	Excellent colour reproduction	Magazines, flyers brochures
Tracing paper	Translucent stock with little space between paper fibres. Low ink absorption, difficult to print on	Possible, but limited	Special projects
Tissue paper	Thin, highly-absorbent stock	Unsuitable	Not applicable

Client: Casco Editions
Design: Experimental Jetset
Colour overview: Colour stocks used to replicate artwork.

Ellsworth Kelly
 This book, which was created by Experimental Jetset, is specifically designed to display an interpretation of Blue, Green, Yellow, Orange, Red – a piece by American minimalist artist Ellsworth Kelly. Kelly's work comprises five monochrome panels: three are the primary colours and two are their intermediary colours: green and orange. The book contains a full-scale replica of the painting, which is reproduced using different coloured paper stocks that are bound together into a single volume.

Related information

Related information such as definitions are isolated and explained.

The Basics

Client:

Imperial Records, Japan

Design: Form Design

Colour overview:

Limited palette of graduated
colour fills create a playful
sense of movement



COIL



New Single **Loveless**

2003.8.6 release
TECI-51
1,000yen (tax out)



New Album **LOVE**

2003.9.3 release
TECI-1047
2,900yen (tax out)

COIL Tour **"LOVE LIVE"**

2003.9.14 @ Shinsaibashi
Club Quattro
info. Greens 06-6882-1224

2003.9.18 @ Shibuya
Club Quattro
info. Flip Side 03-3470-9999

COIL official web
<http://www.office-augusta.com/coil/>
Imperial Records web
<http://www.teichiku.co.jp/imp/>



The Basics

Colour is perhaps the first element that we register when we view something for the first time. Our cultural development and conditioning mean that we will naturally make associations based upon the colours we see, and these provide an idea of how we should react to an object or design that incorporates them. Colours attach meaning, and our reaction to this will depend upon cultural associations, trends, age and individual preferences.

Colour is a key element of graphic design, a tool that can be used to attract attention, steer and direct the viewer, and inform them about the type of reaction they should have towards the information presented. This book introduces a number of basic concepts that relate to colour usage in graphic design, and show how contemporary designers use colour to bring their work to life. Such concepts include how colours can be combined in specific schemes in order to create a range of different moods.

This book uses specific terminology that relates to colour theory. It is important to understand these terms, as they facilitate effective communication between designers, printers and clients. Sometimes complex terms – such as value, hue and saturation – are all defined clearly and simply here.

Coil (left)

This promotional material was created by Form Design. It features a circular pattern that uses a predominantly blue colour palette and two graduated colour fills that surround the name of the band: Coil. One half of the fill combines the blue with yellow and the other half with magenta.

Colour codes

Colours can have a variety of embedded meanings, which can be linked to different emotions and moods.

As such, colours can be used to illicit a specific emotional reaction in the viewer. This spread summarises some of the common meanings that are associated with different colours, but this is not a universal guide because associated meanings will differ from country to country and within different cultures. The colours and their related associations presented below provide a starting point for linking colours to emotions, but creativity can transcend many of these associations depending upon how colours are used.



Scarlet red

Exciting, aggressive, dramatic and dynamic.



Brick red

Secure, natural and strong.



Warm red

Seductive, arousing and sultry.



Vivid pink / magenta

Passionate, flamboyant and attention grabbing.



Light pink

Sweet, delicate and feminine.



Dusty pink

Romantic, luscious, tender and sentimental.



Mauve

Serene, subtle and mellow.



Burgundy

Opulent, wealthy, intense and grand.



Fuchsia

Voluptuous, energetic, theatrical and fun.



Terracotta

Spicy, warm, ethnic and wholesome.



Orange

Fun, glowing and vital; the warmest of colours.



Peach

Healthy, soft, gentle, tactile and velvety.



Bright yellow

Hopeful, cheery, but also cowardly and deceitful.



Light yellow

Inspiring, warm, calming, hazy and summery.



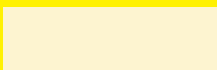
Golden yellow

Sunny, autumnal, baked, but also a warning.



Green yellow

Citrus, acidic, fruity, tangy and sharp.



Cream

Dense, rich, clean, classical and simple.



Beige / taupe

Dependable, flexible, bland and timeless.



Brown

Wholesome, earthy, dependable and friendly.



Coffee / chocolate

Succulent, durable and delicious.

**Fawn**

Secure, practical,
organic and rustic.

**Lilac**

Feminine, refined,
elegant and graceful.

**Lavender**

Floral, scented, nostalgic
and eccentric.

**Purple**

Sensual, futuristic
and embracing.

**Royal purple**

Majestic, expensive
and regal.

**Plum**

Full-bodied, plump
sophisticated and unique.

**Violet**

Mysterious, fantasy,
spiritual and floral.

**Teal**

Cool, expensive,
confident and trendy.

**Electric Blue**

Dynamic, engaging, bold
and exhilarating.

**Navy**

Uniform, reliable, safe,
traditional and constant.

**Royal blue**

Committed, dramatic,
professional and vibrant.

**Sky blue**

Relaxing, happy and
trustworthy.

**Turquoise**

Healing, spiritual,
mystical and exotic.

**Baby blue**

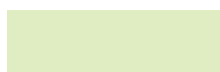
Cute, youthful, serene,
quiet, cosy and subdued.

**Aqua**

Fluid, refreshing,
cleansing and energising.

**Dark green**

Natural, organic, plentiful
and luscious.

**Light green**

Rejuvenation, edible, but
also nauseous.

**Olive green**

Classic, drab, muddy,
and durable.

**Khaki**

Uniform, camouflage,
military and resourceful.

**Lime**

Acidic, tart, refreshing,
juicy and zestful.

**White**

Purity, innocence,
goodness and clinical.

**Gold**

Wealth, extravagance,
excess, luck and tradition.

**Silver**

Prestigious, grand, cool
and metallic.

**Bronze**

Warm, tradition, durable
and rustic.

**Black**

Magical, dramatic,
elegant, sinister and bold.

**Charcoal**

Sophisticated, sober
and professional.

**Cool grey**

Spartan, reputable
and miserable.

**Warm grey**

Contemplative, worldly
and sober.



Culture Lab (this page)

These posters were created by Intro design studio for a British Council awareness campaign called Culture Lab. The British Council promotes British science, education and contemporary culture. While blue is generally considered a somewhat conservative colour, here it is warmed by the use of green. This creates a cool, youthful feel that complements the tritone photograph of the band: Radiohead.

Inside Out (left)

This spread is taken from a corporate brochure, which was created by Still Waters Run Deep for laboratory products developer Whatman. The vibrant orange colour provides a sense of vitality and, together with the water splash, imparts a feeling of well-being and goodness. The dash of orange brings instant warmth to the design and serves as a particularly attractive contrast to the largely white background.



Basic terminology

Colour theory begins with the definition of different types of colour and how they can be combined for different uses.

Primary colours

Primary colours come in two forms: additive and subtractive. Additive primaries are red, blue and green that in the form of light combine to form white. The subtractive primary colours or painting primaries are blue, red and yellow, which are associated with reflected light. When combined, the subtractive primary colours produce black. These colours are somewhat different from the four-colour printing process where cyan, magenta and yellow, together with black, are used as the printing primaries because they produce a better result than painting primaries.

Secondary colours

A secondary set of colours can be produced by the combination of any two primary colours in equal proportions. In the subtractive colour space, the secondary colours produced are red, green and blue, while in the additive colour space the secondary colours produced are cyan, magenta and yellow. An example from each colour set is shown below:



Creating secondary colours
using light (RGB)



Creating secondary colours
using pigment (CMY)



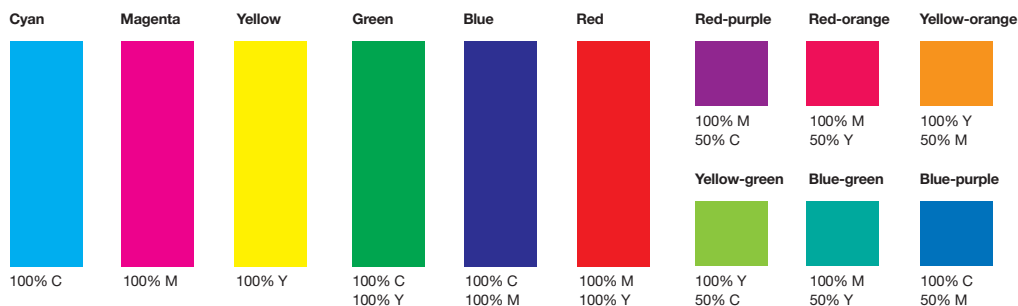
Creating secondary colours using
painting prescriptives (RYB)

Tertiary colours

Tertiary colours are produced by combining a secondary colour with the primary colour that is not already present within it. This is equivalent to mixing subtractive primary colours in the proportions 2:1 or 1:2. Tertiary colours are not produced in this way in the four-colour printing process as the addition of different amounts of colour accumulates and produces black.

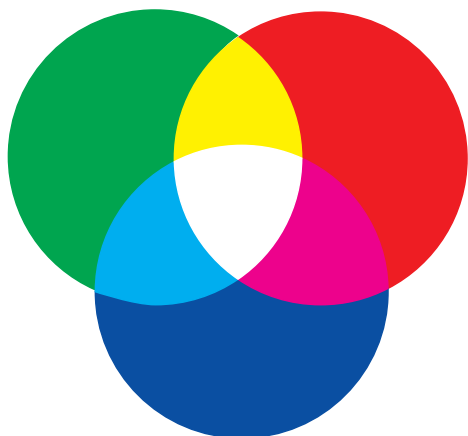
In colour theory, primary colours are mixed to create secondary colours, and tertiary colours can be made from these. Instead, they have to be simulated as shown on the opposite page.

Subtractive primaries and colour assimilation



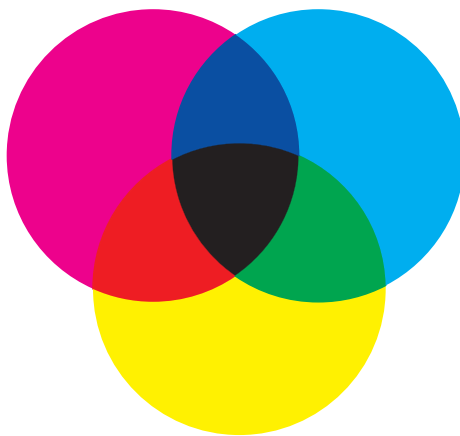
The example above shows how the subtractive printing primaries can be combined to produce the additive primaries and simulate secondary colours. As this page is printed using the four-colour process (CMYK), and it is not possible to mix the RGB and CMY colour spaces, the above percentages demonstrate how tertiary colours can be assimilated in CMY. For instance, to assimilate blue-purple, mix 100% cyan (C) and 50% magenta (M). This is the same as mixing the secondary colour blue with the primary colour yellow.

Additive primaries



This diagram shows the additive primaries. Where red and green overlap, yellow is created. Magenta is formed where red and blue overlap, and cyan is created where blue and green overlap. These secondary colours are the subtractive primaries. Each additive primary represents a component of white, so where all three colours overlap, white is produced because all the components are present.

Subtractive primaries

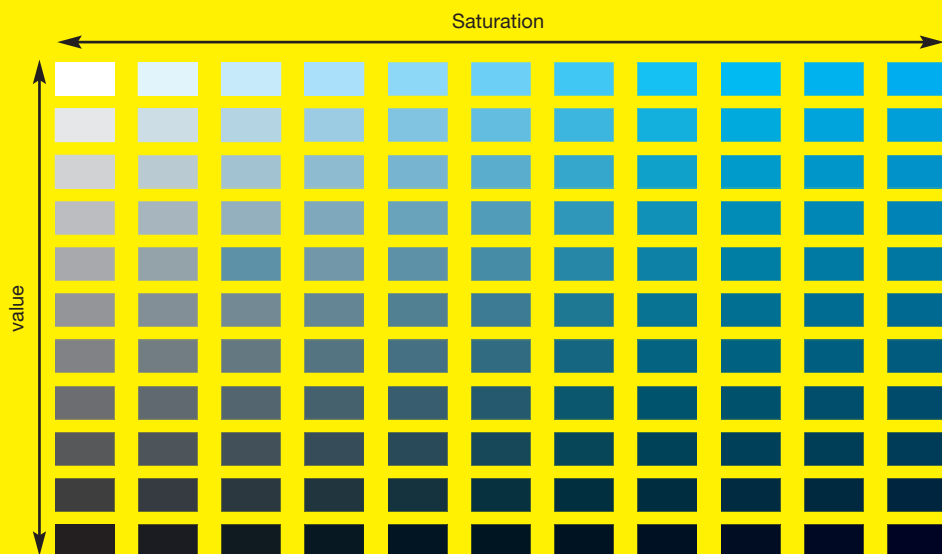


This diagram shows the subtractive primaries. Each of these has one of the additive primaries missing. Where two subtractive primaries overlap, only one additive primary is visible. Blue is formed where cyan and magenta overlap. Cyan and yellow overlap to produce green. Magenta and yellow combine to form red. Where all three subtractive colours overlap, black is produced because no light escapes.

Describing colours

Every colour corresponds to a unique light wavelength, but a list of different wavelength values does not provide a particularly useful description of a colour.

Similarly, the names of different colours have descriptive limits: what does dark red actually mean? Hue, saturation and brightness are values that are often used to describe colour in greater detail.



Hue / colour

Hue, or colour, refers to the unique characteristic of a colour that helps us visually distinguish one colour from another. Hues or colours are formed by different wavelengths of light.

Saturation / chroma

Saturation, or chroma, refers to the purity of a colour. As the diagram above demonstrates, saturation levels describe a colour's tendency to move towards or away from grey. At maximum saturation a colour contains no grey, such colours are described as vivid, bright, rich, full and so on. At lower saturation levels, the colours contain increasing amounts of grey, which result in subdued, muted and dull colours.

Value / brightness

Value refers to how light or dark a colour is. Changes in value can be achieved by mixing a colour with different proportions of white or black. A colour that is mixed with white is called a tint (see page 74), while those mixed with black are called shades. Value is not to be confused with saturation as the two are independent.