DEMYSTIFYING COLOUR
Making Sense of Different Colour Models & Systems
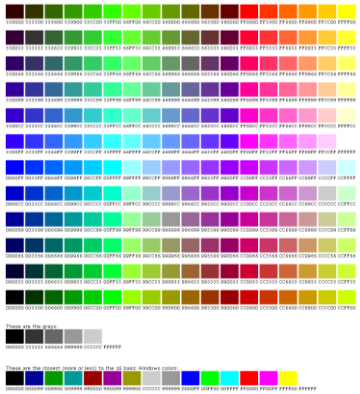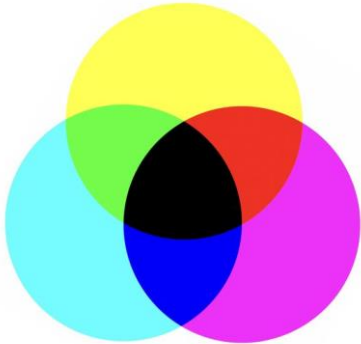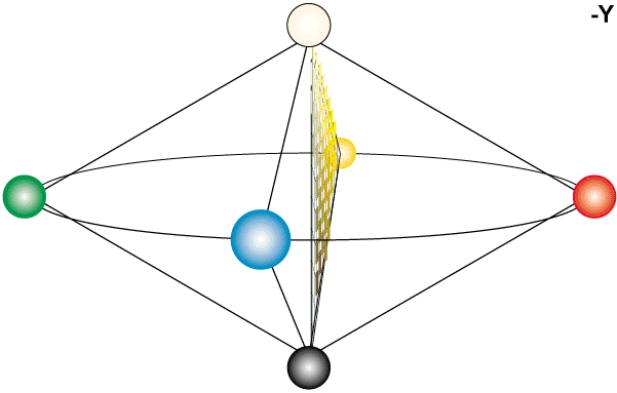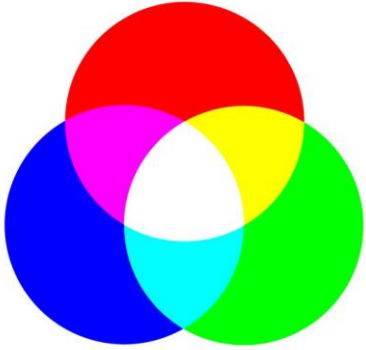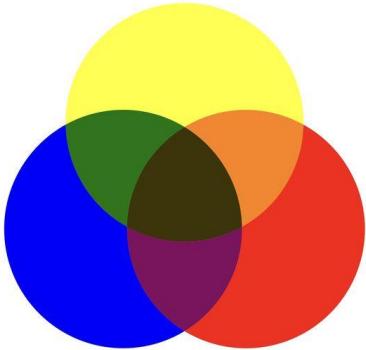
Demystifying Colour

Learning outcomes:

- Understand the relevance of accurate colour identification for design and the built environment

- Understand different colour systems including RYB, Pantone PMS, NCS, CMYK, RGB, and Hex codes

- Distinguish between key online tools to identify and colour match with reference to Resene Paints
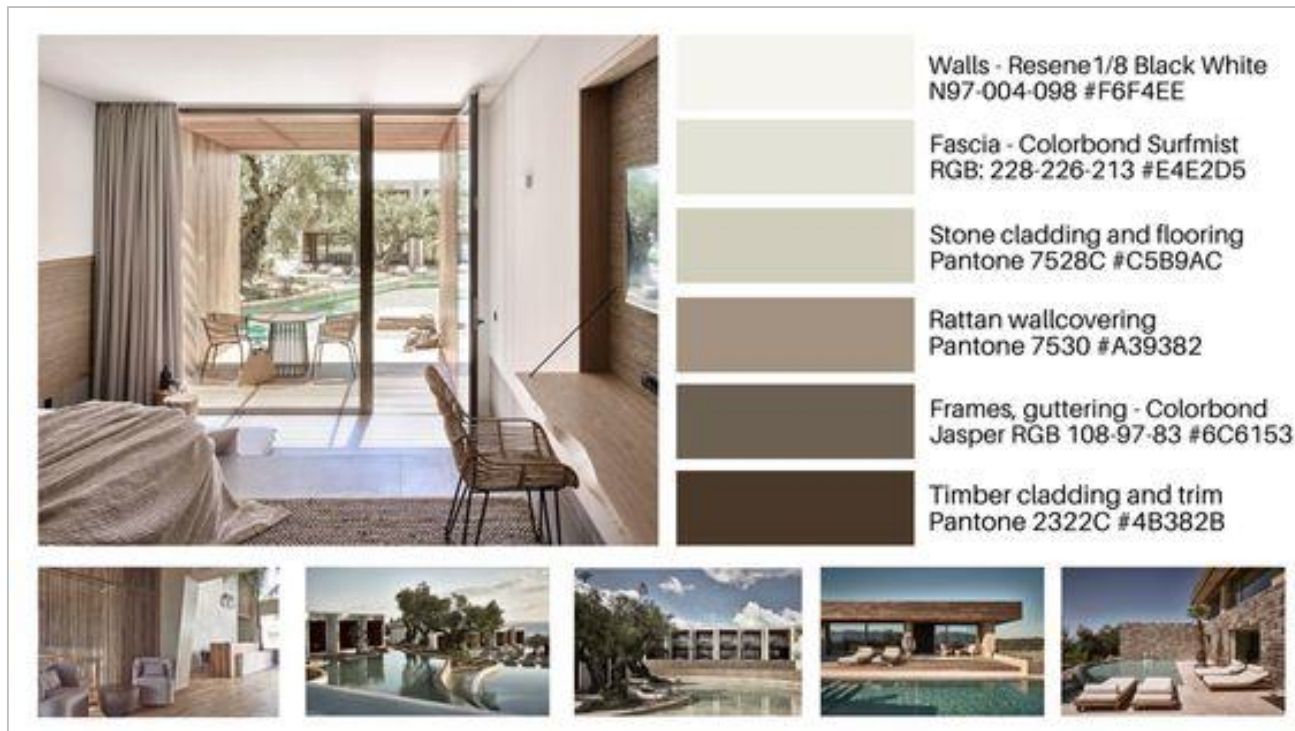
Introduction

Multiple colour models and systems exist that have relevance to design and the built environment.

Introduction

Designers and architects often refer to one or more colour systems when specifying colour.

Introduction

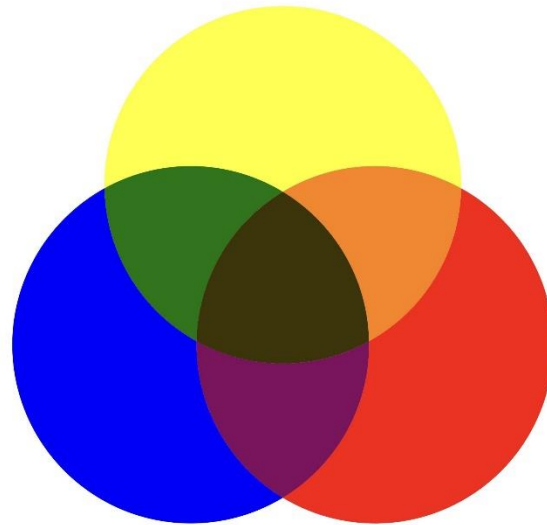More complex projects often involve a larger range of different colour systems.

RYB colour

The RYB colour model underpins traditional colour theory and features in colour curriculum in design schools and universities throughout the world.

RYB colour

In the past, designers, architects, and illustrators created their own coloured imagery using watercolours, gouache paint or similar media.
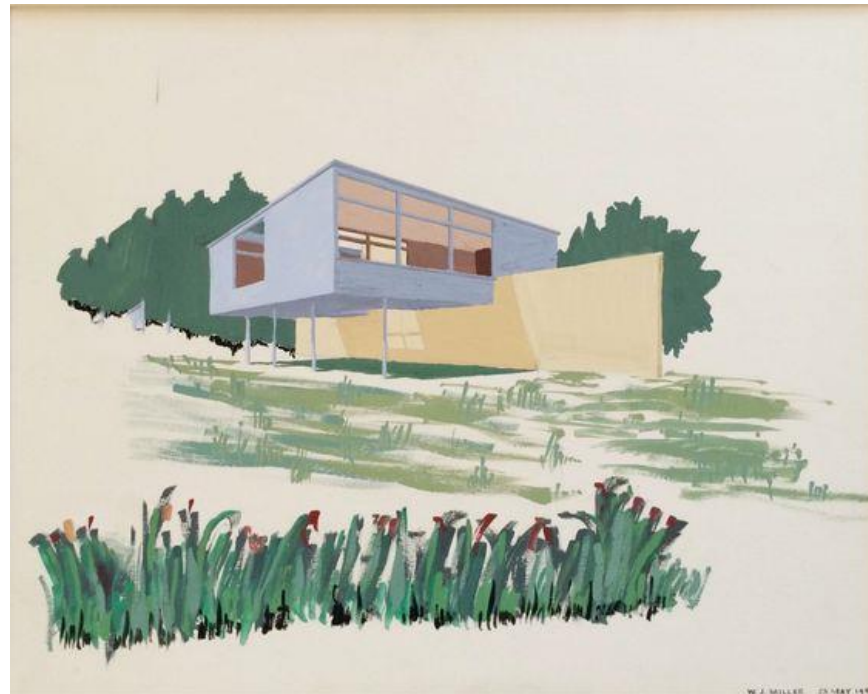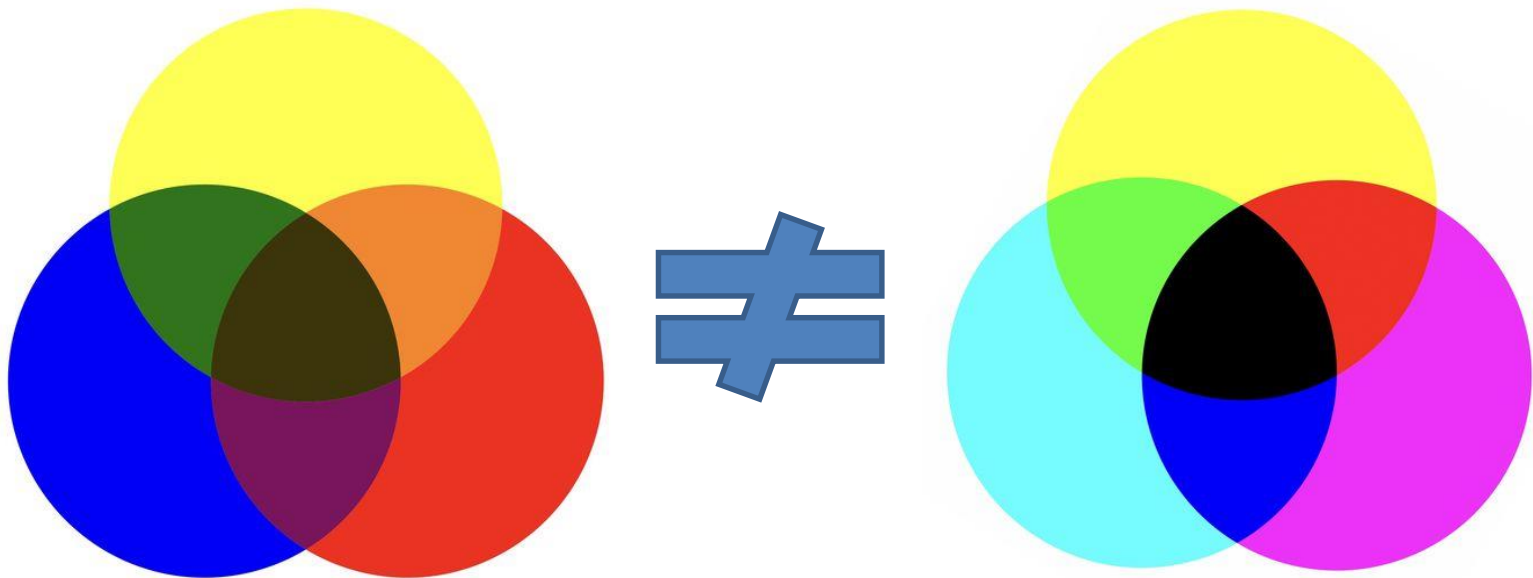
RYB colour

The lack of a universal colour notation language prompted the development of colour systems that could identify and translate colour data from RYB.
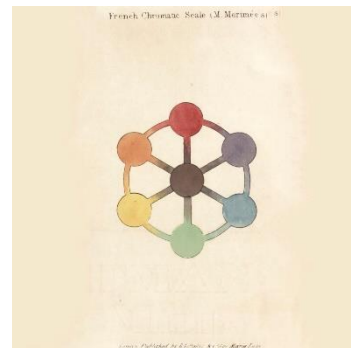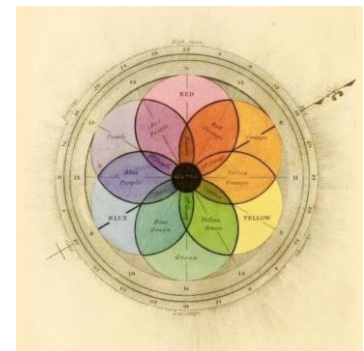
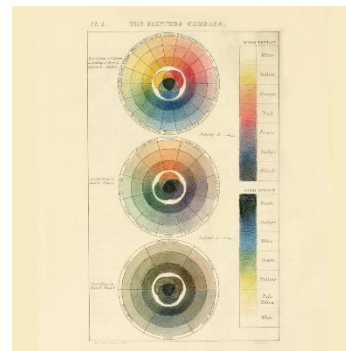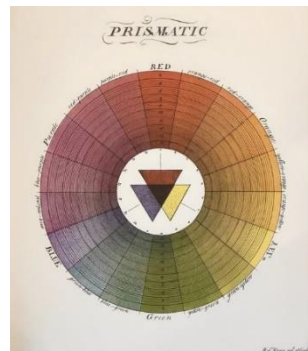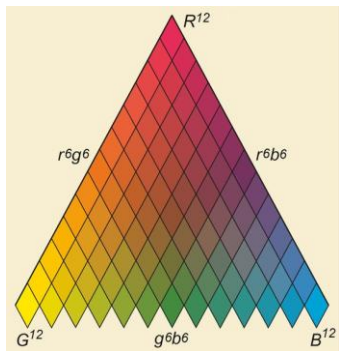# RYB colour

RYB Colour should not be conflated or equated with CMYK colour - they're not the same.

RYB colour – origins

RYB colour featured in early colour theories and continues to have relevance in colour exploration and application in design and the built environment.

RYB colour

RYB colour strategies continue to be used and applied in design and the built environment. These picnic huts feature contrasting colours.
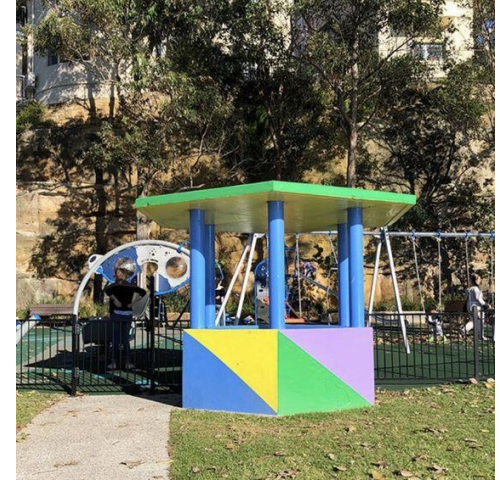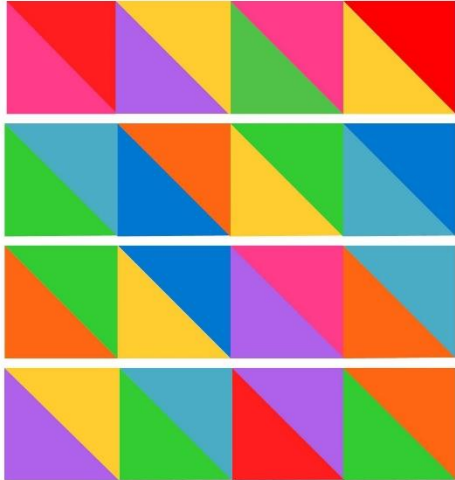
Pantone PMS system

The Pantone PMS colour matching system was developed in 1963 out of a need to accurately identify and communicate colour data.

Pantone PMS system
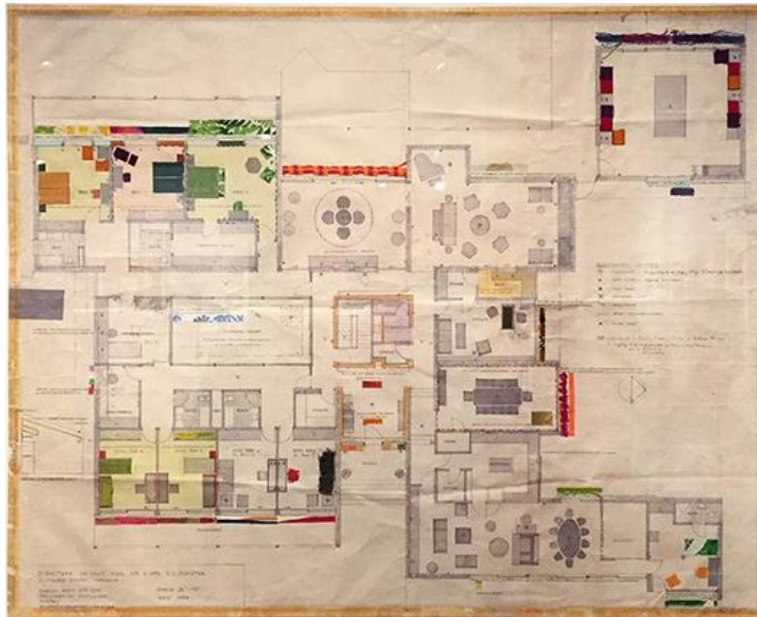
Before CAD, graphic designers, advertising illustrators, interior designers and architects created illustrations using gouache paint, watercolours, pen and ink.

Images: Marion Hall Best Design Exhibition, Sydney Living Museums, 2017

Pantone PMS system

In 1963, Lawrence Herbert launched the first Pantone fan deck which featured 500 colours.
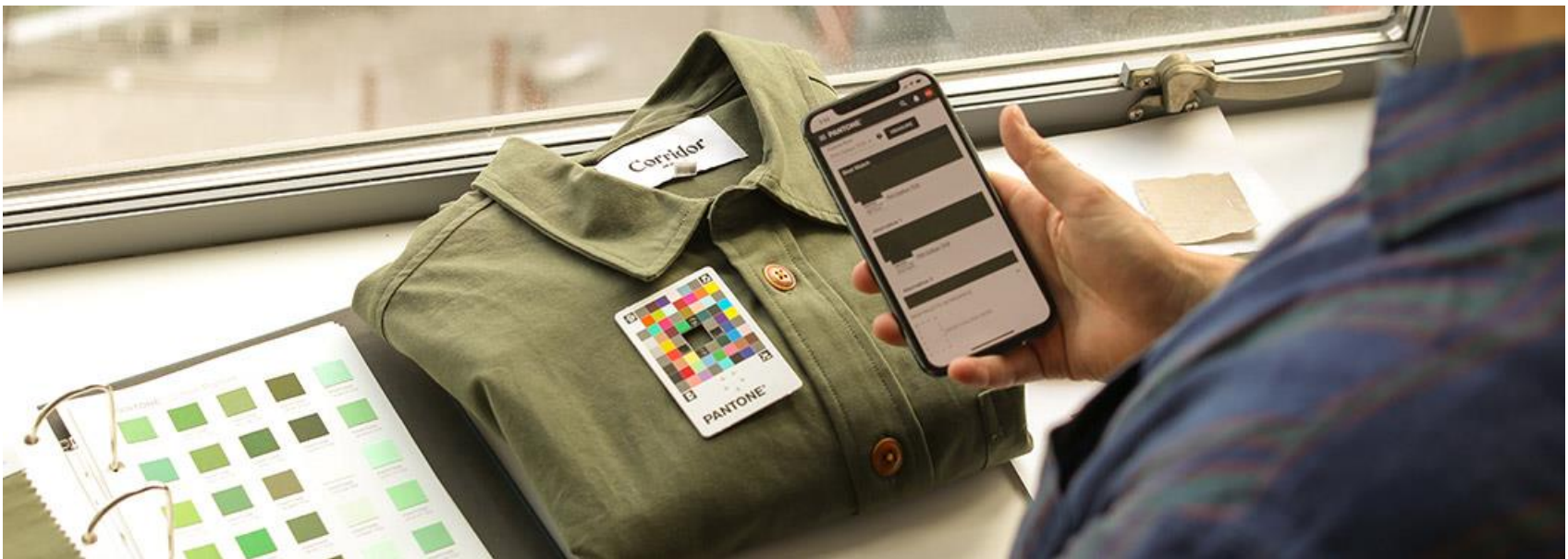
Pantone PMS system

Pantone systems are now available for the graphics and print industry sectors, and for the apparel, textiles and interior design sectors.
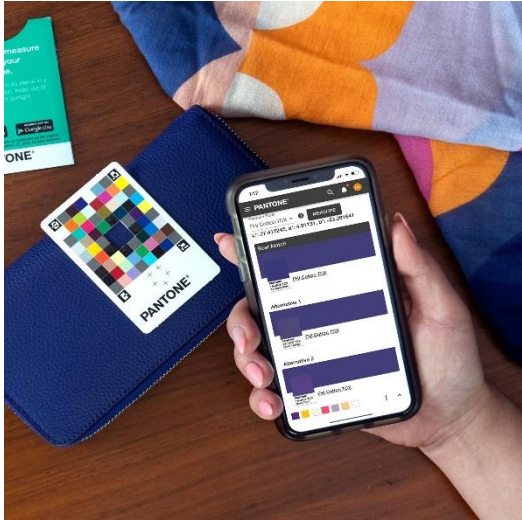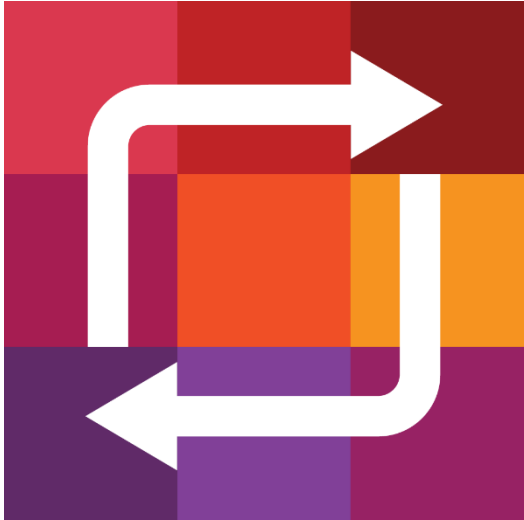
Pantone PMS system

Pantone offer a range of portable, digital tools for identifying colour quickly and easily.
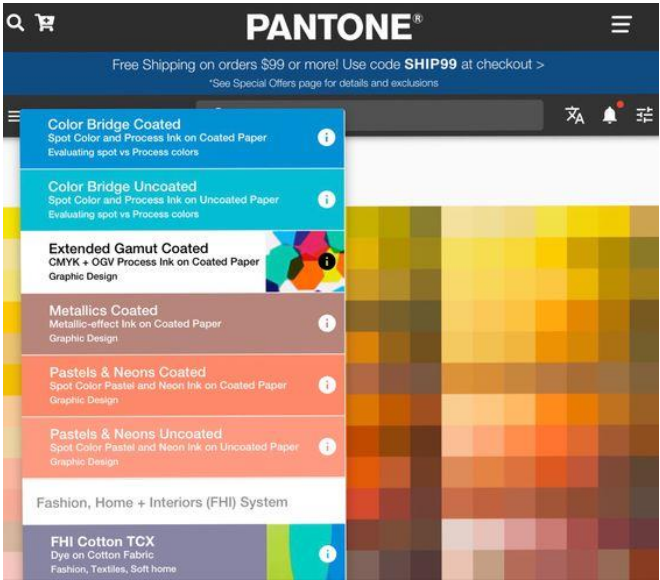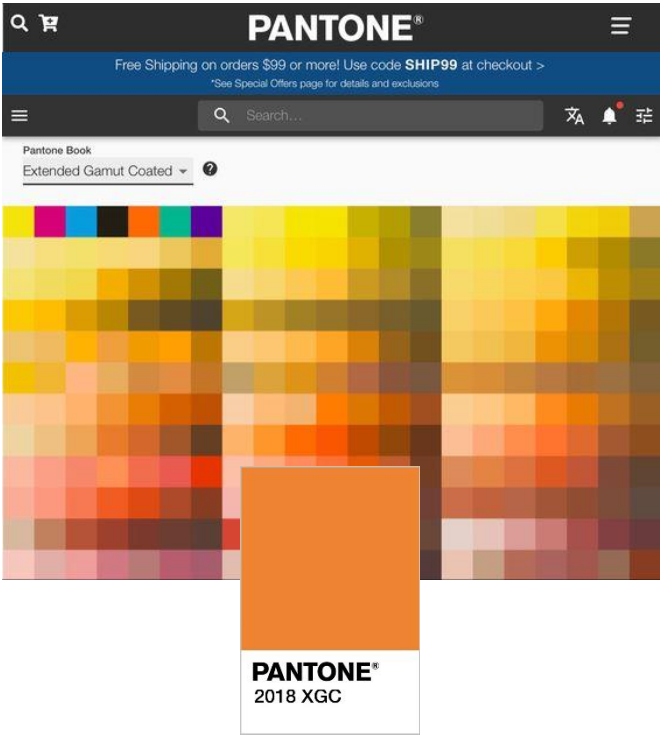
Pantone PMS system

Pantone Colour Match Card

Pantone PMS system

Pantone colour code protocol relates to the individual colour code + name and product category.

Pantone PMS system

Pantone Colour of the Year – an influential colour that informs colour selection in apparel, graphic, product and interior design.
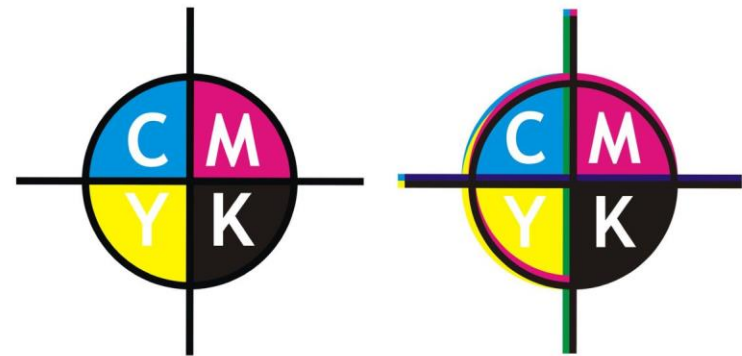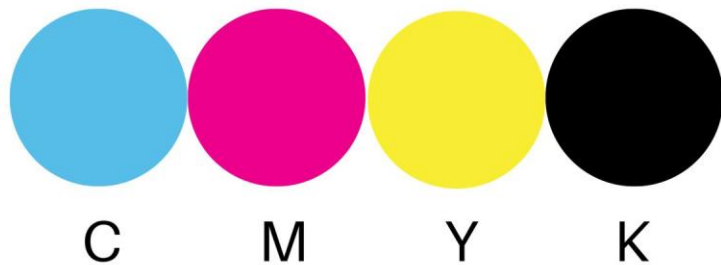

2020

2019

2018

2017

CMYK colour

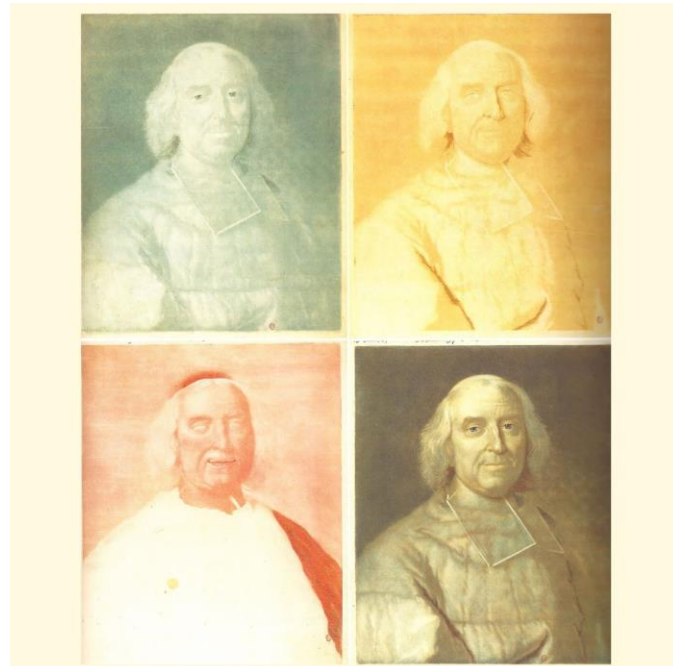CMYK colour emerged in the 19th century as a means of printing colour.

CMYK REGISTRATION MARKS

ALIGNED   MISALIGNED

CMYK colour – origins

Le Blon invented four-colour mezzotint printing using four metal plates, one each for yellow, red and blue with black printed last.

Jacob Christoph Le Blon
First four colour mezzotint, 1715
Image: British Museum

CMYK colour

In CMYK printing, tiny dots of cyan, magenta, yellow and black are overlapped and these perceptually blend the colours to create a meaningful image.

Image: joesfer.com

CMYK colour

The individual CMYK 'proofs' that constitute the resulting printed image of a barn.

CMYK colour

Four individual CMYK 'proofs' plus four progressive 'proofs' of a Marvel Comics cover.

Four 'proofs' test printouts
Image: Guy Lawley

Four progressive prints
Image: Guy Lawley

CMYK colour

CMYK coding follows strict numerical protocols that indicate the exact proportion of CMYK.

	C	M	Y	K
White	0	0	0	0
Cyan	100	0	0	0
Magenta	0	100	0	0
Yellow	0	0	100	0
Black	0	0	0	100

CMYK colour

Spotify

CMYK – 80, 0, 80, 0

Cadbury

CMYK – 90, 100, 0, 0

CMYK colour

CMYK and brand colours – accurate colour matching is imperative for graphic design, marketing collateral, signage and interior design.

ATLASSIAN   #0052CC

Image: Atlassian

NCS Colour System

A proprietary system that includes a colour atlas, colour identification collateral, educational materials plus online and digital colour identification tools.
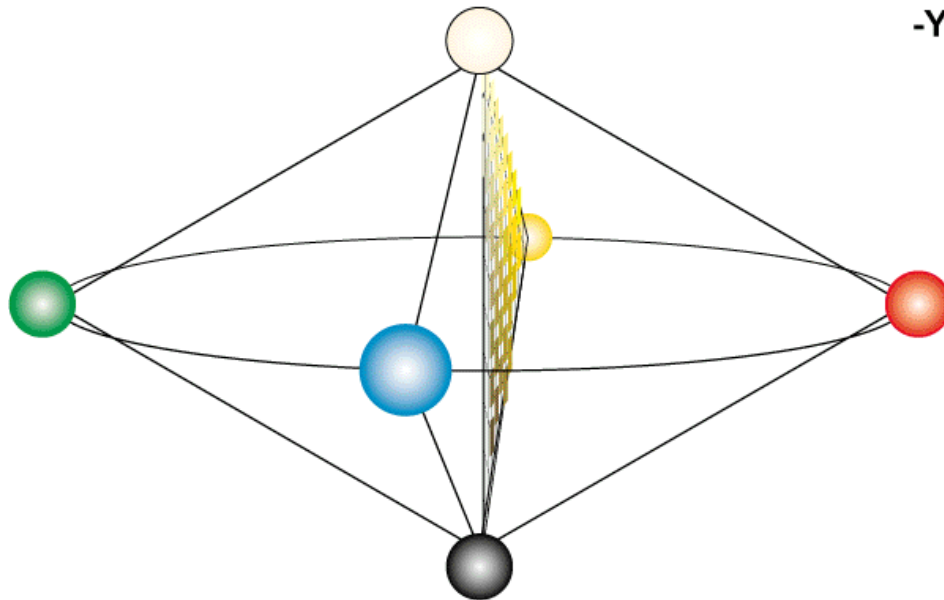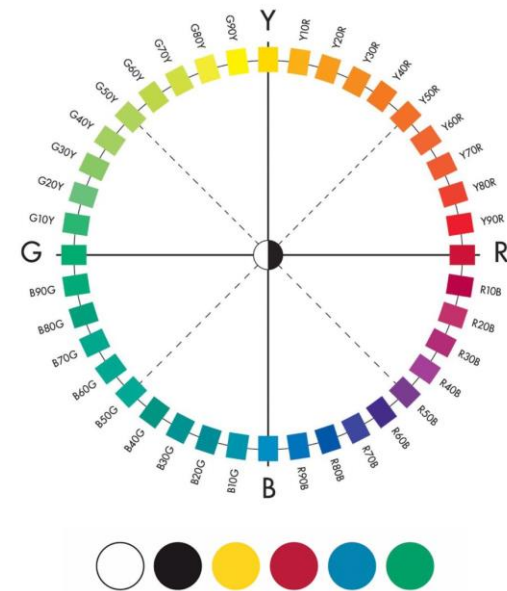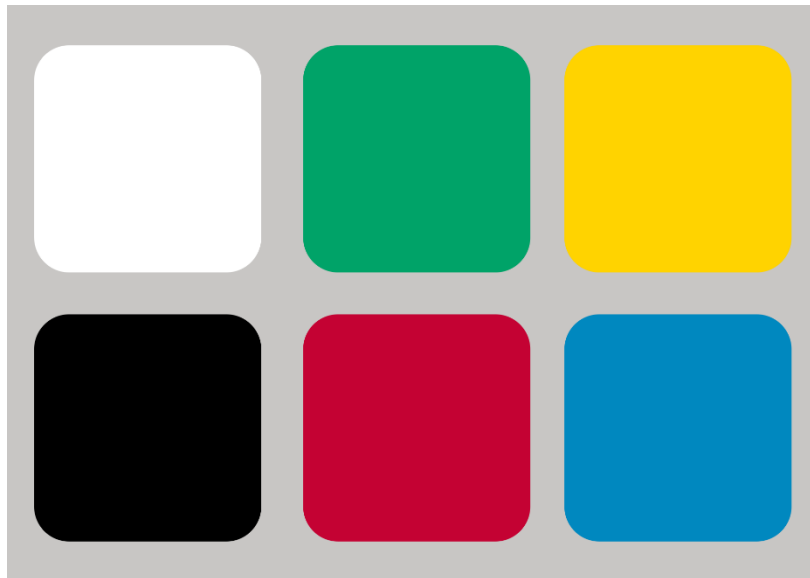
NCS Colour System

NCS colour system is based on the colour theories of Ewald Hering (1878) and extensive colour research by Anders Hård, Lars Sivik, and Gunnar Tonnquist
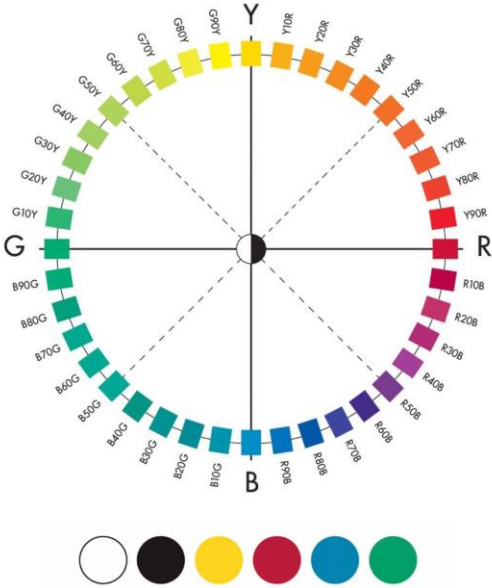
NCS Colour System

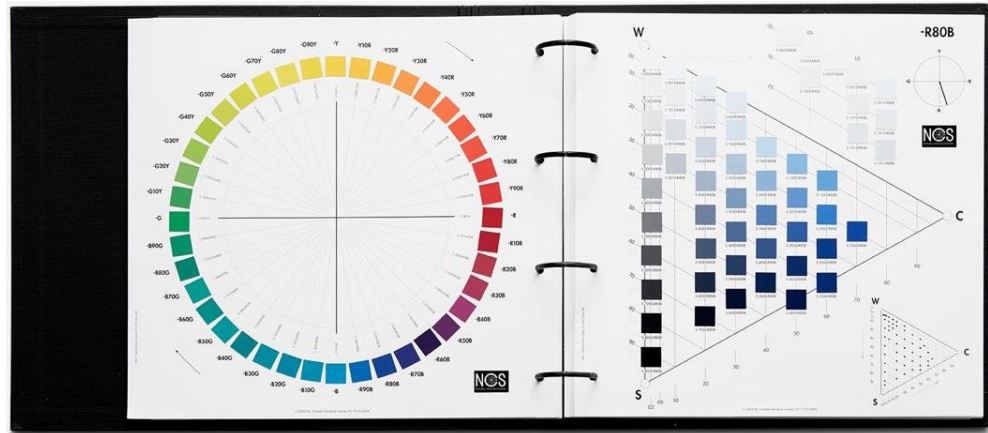The NCS colour system features three pairs of elementary colours: white and black, red and green, plus blue and yellow.

NCS Colour System

The NCS colour system includes extensive colour reference materials and tools for use by architects and across all areas of applied design.
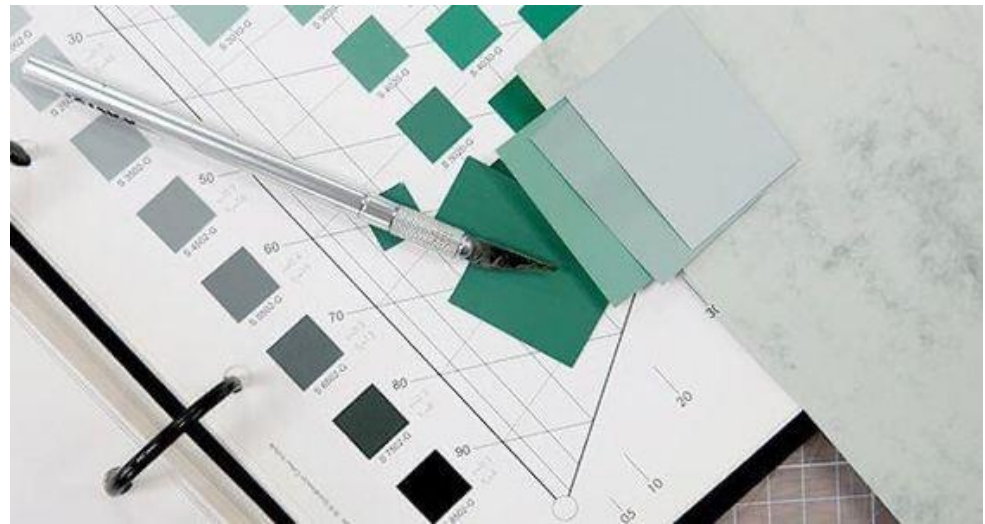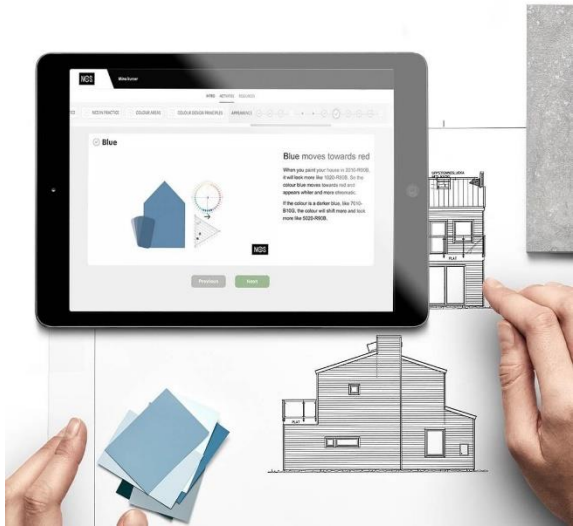
NCS Colour System

The NCS colour system is used as the standard colour system in Sweden, Spain, Norway and South Africa.

NCS Colour System – coding protocols

S 1050-Y90R

S - Standard
NCS colour

Nuance:
10% Blackness
50% Chromaticness

Hue:
Resemblance to two
elementary colours -
Yellow with 90% redness
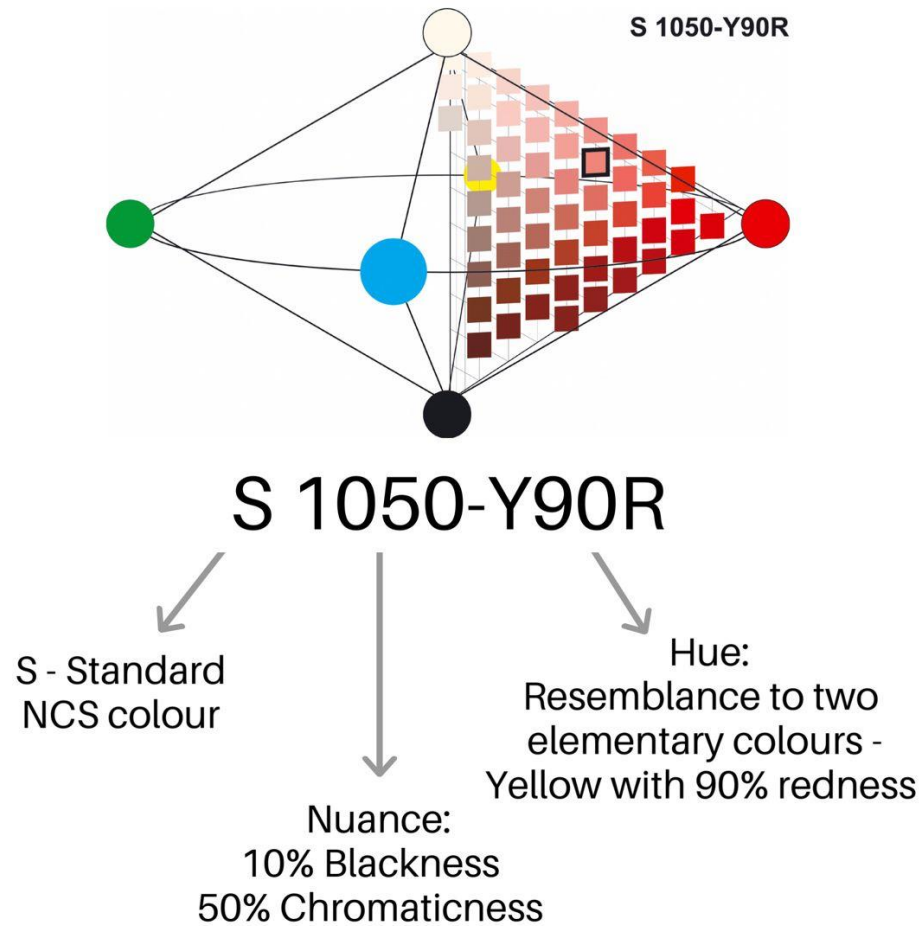
RGB colour

Highly simplistic RGB colour models belie the complexity and accuracy of the RGB notation system.
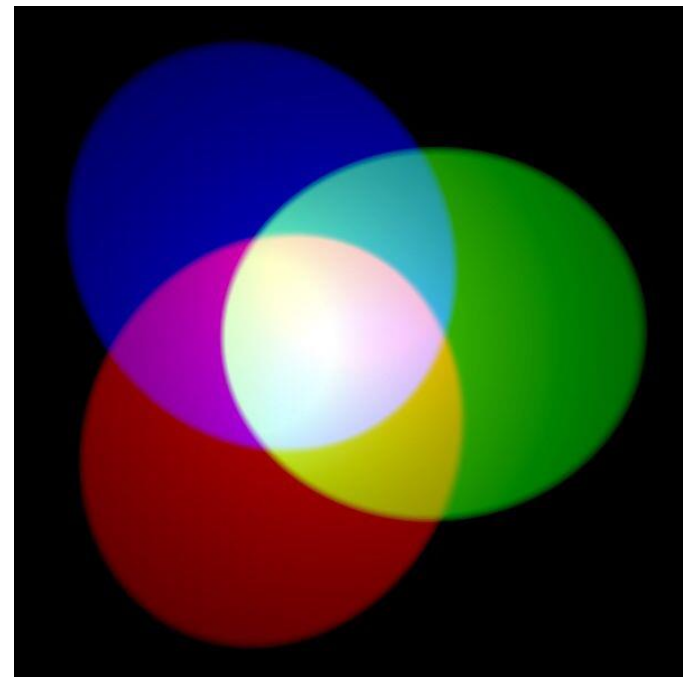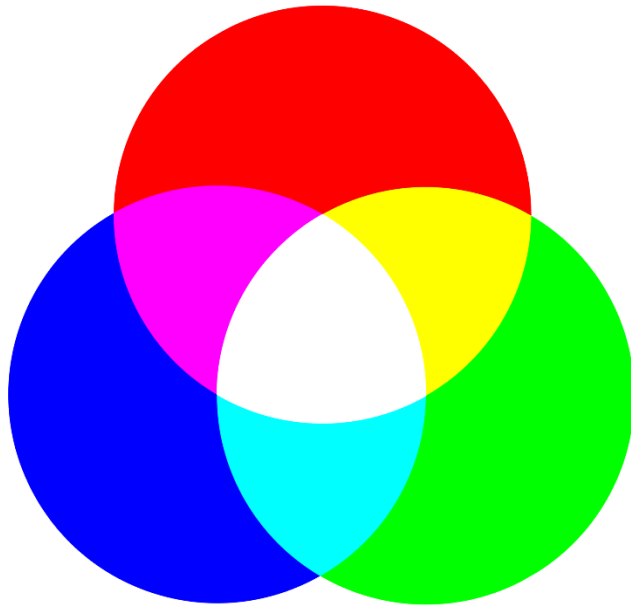
RGB colour

The sRGB colour space was a collaboration between Microsoft and Hewlett-Packard.
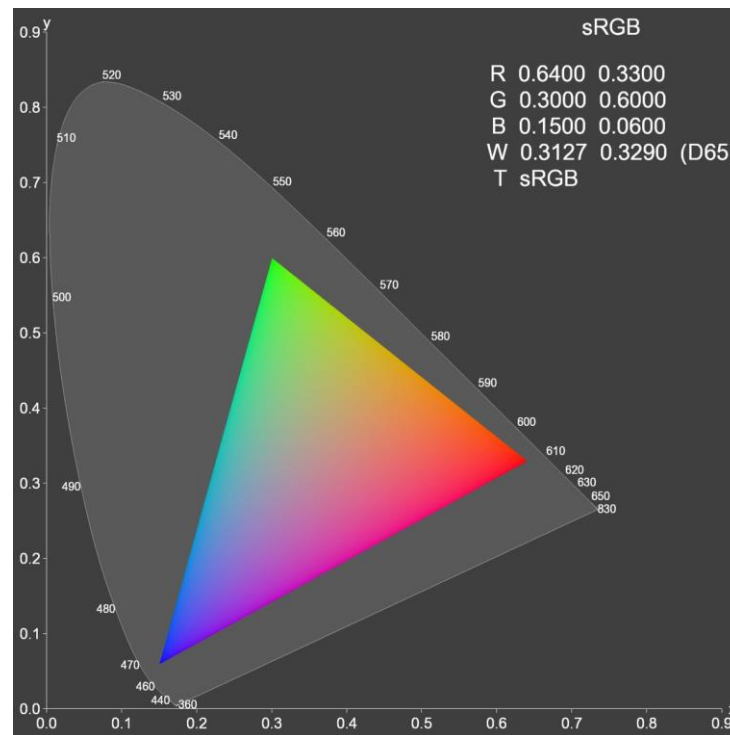
RGB colour

The RGB colour space was initially based on the CIE 1931 xy chromaticity diagram.
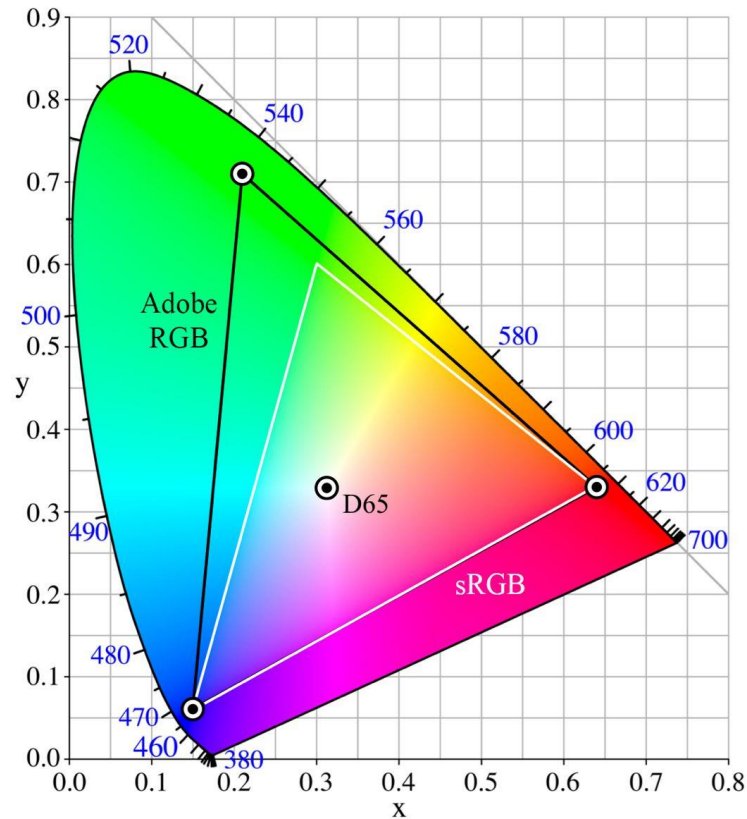
RGB colour

A device-dependent colour space, colour is defined using red, green and blue, with notational variation for each between 0 and 255.
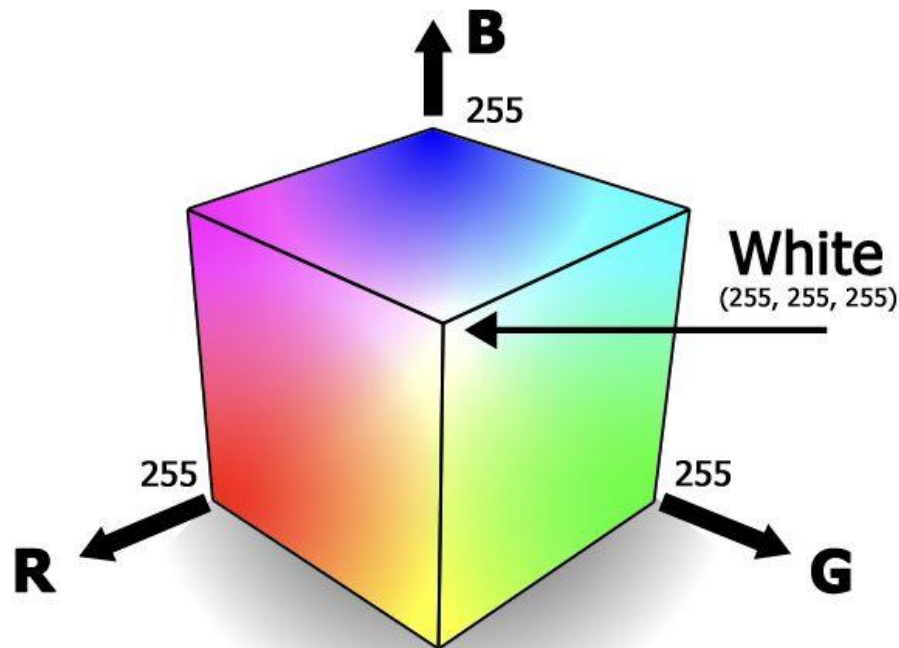
RGB colour

Magnified view of 1 square millimetre of two LCD laptop screens showing RGB sub-pixel structure.
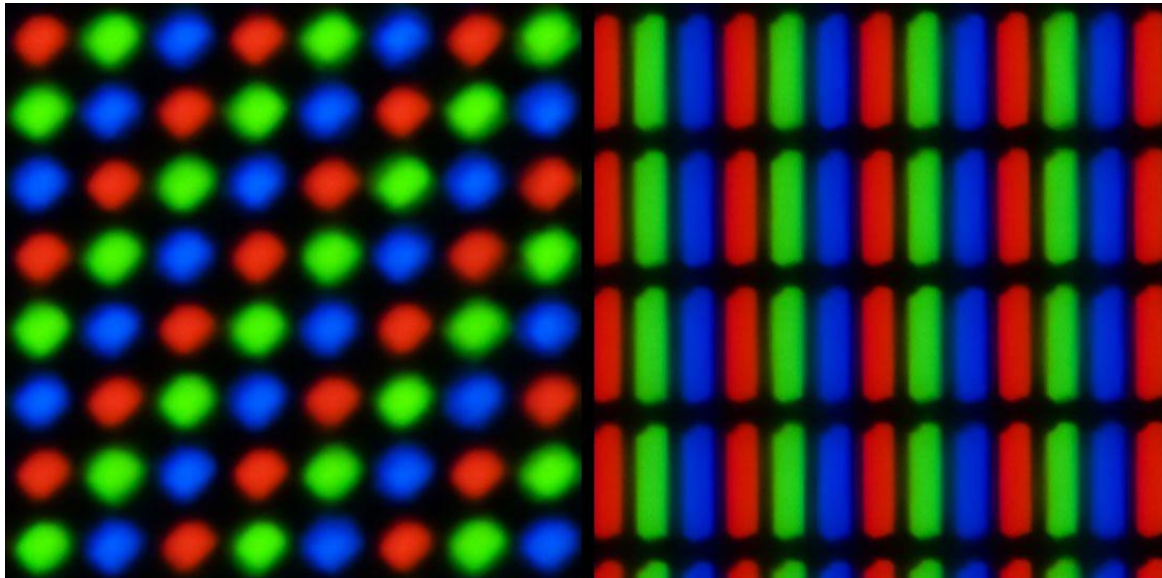
RGB colour

Varying RGB levels creates text and imagery on computer screens, televisions and electronic devices.
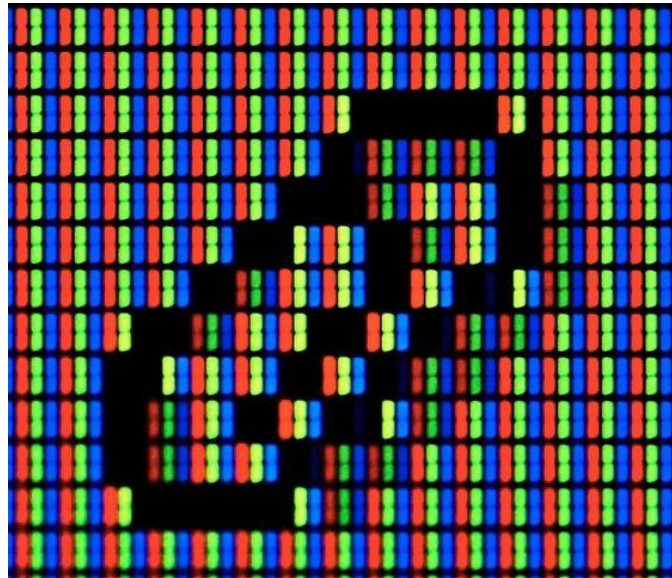
RGB colour

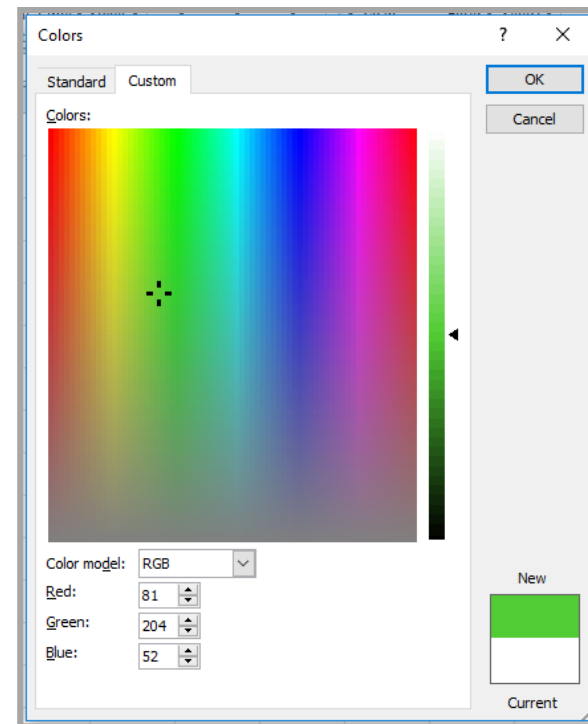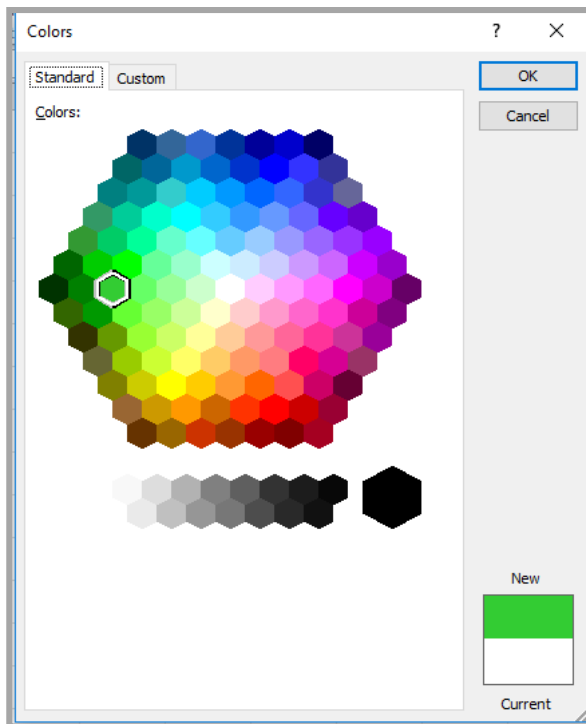Countless variations of colour nuance can be created using RGB values.

RGB 105 - 140 - 75

RGB 245 - 65 - 220

RGB 135 - 75 - 5
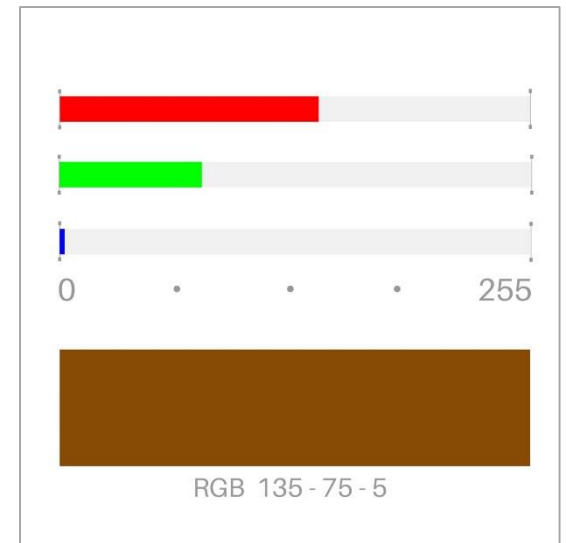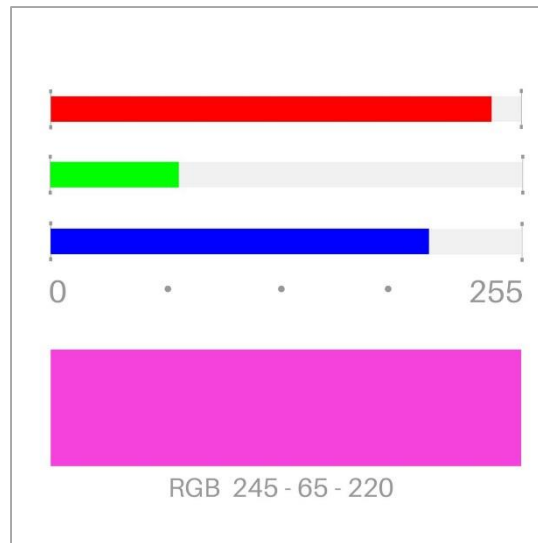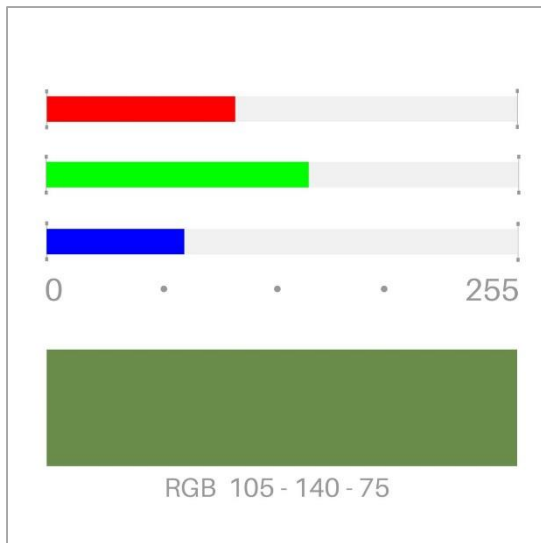
RGB colour

Lower RGB levels leads to lighter tones and higher RGB levels leads to darker tones.

RGB 95 - 95 - 95

RGB 195 - 195 - 195
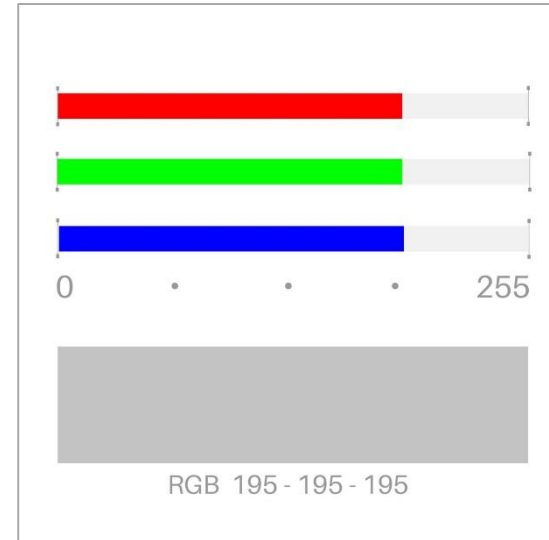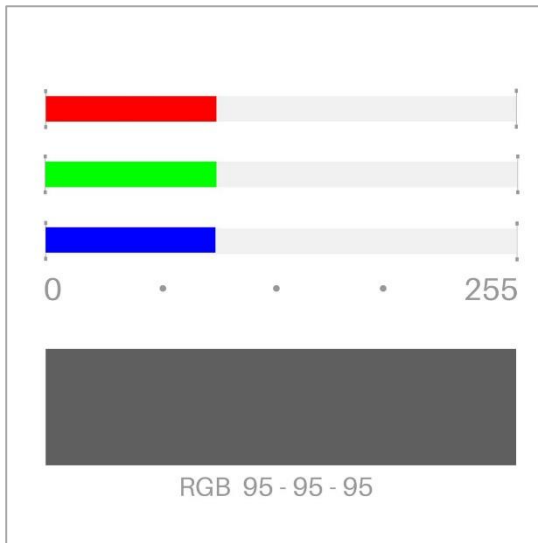
RGB colour

The RGB colour system underpins colour dialogue boxes found in common software applications.

Hex colour codes

Hex/HTML colours represent a very large range of web safe colours, more than this limited chart.
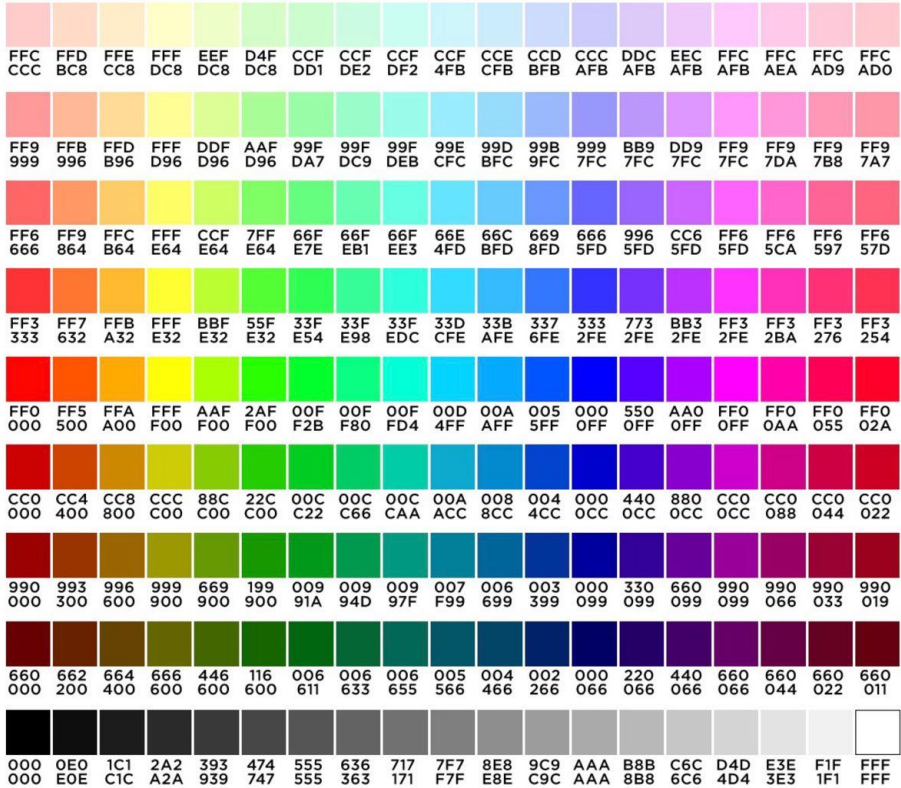
Hex colour codes

Hex colour dialogue boxes feature in popular apps including Canva, Pixel Picker and Word Swag.

#D6861A
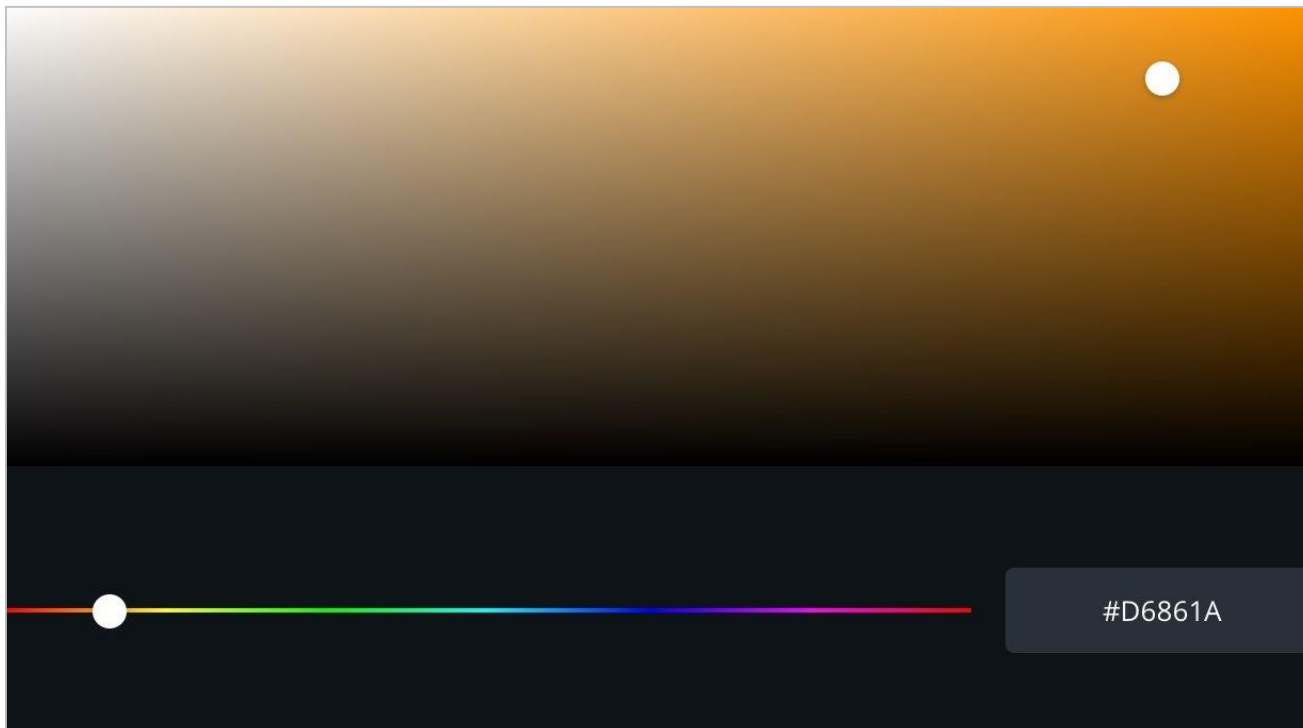
Hex colour codes

Hex triplet colour codes are six-digit, three-byte numbers.

The range features 00 to FF

Byte 1: red value

Byte 2: green value

Byte 3: blue value

	White	#FFFFFF
	Silver	#C0C0C0
	Gray	#808080
	Black	#000000
	Red	#FF0000
	Maroon	#800000
	Yellow	#FFFF00
	Olive	#808000
	Lime	#00FF00
	Green	#008000
	Aqua	#00FFFF
	Teal	#008080
	Blue	#0000FF
	Navy	#000080

Colour Conversion Tools

Converting colour data from one colour system to another is a common task for designers, architects, specifiers and design professionals.
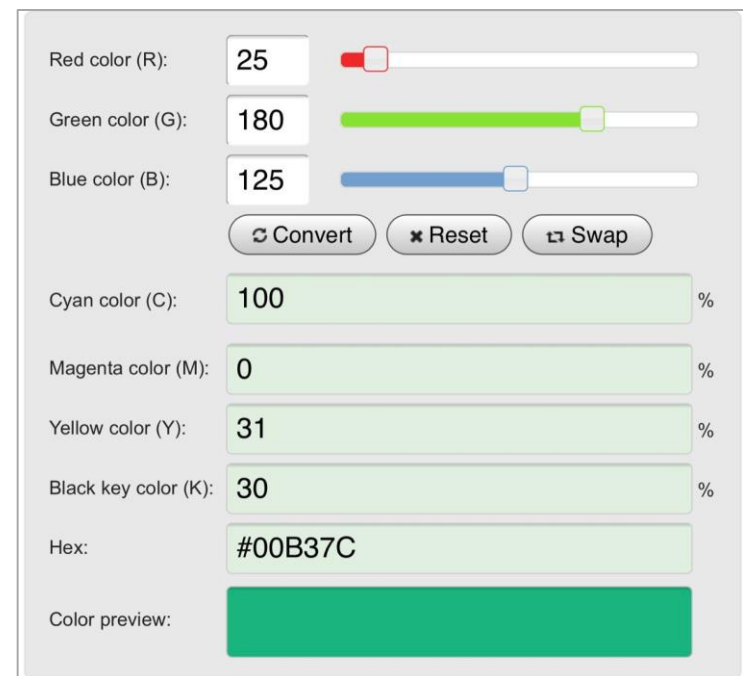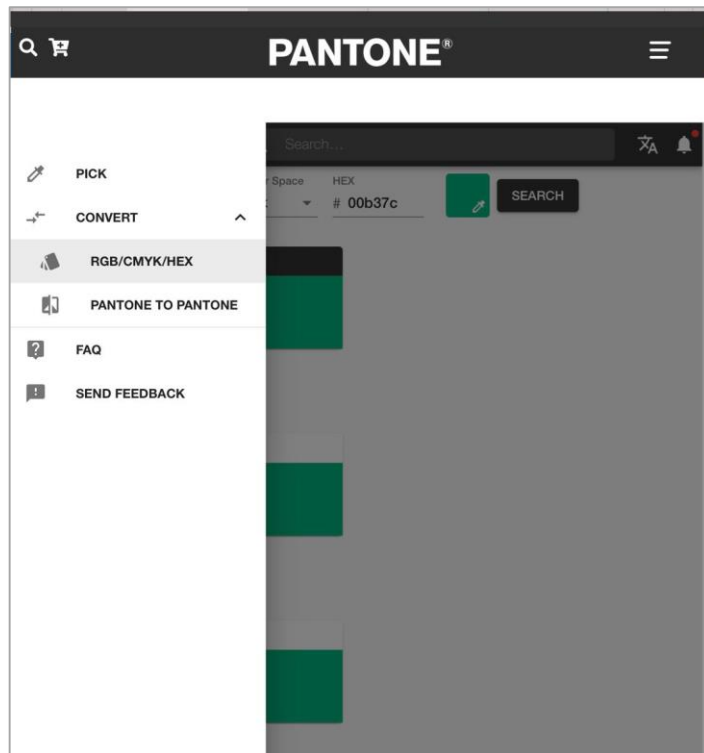
Colour Conversion Tools

Interior designers are often required to convert brand colours for interior design schemes.

Colour Conversion Tools

Pantone and Rapid Tables provide online colour conversion tools – both have some limitations.

Colour Conversion Tools

Resene's Find-A-Colour
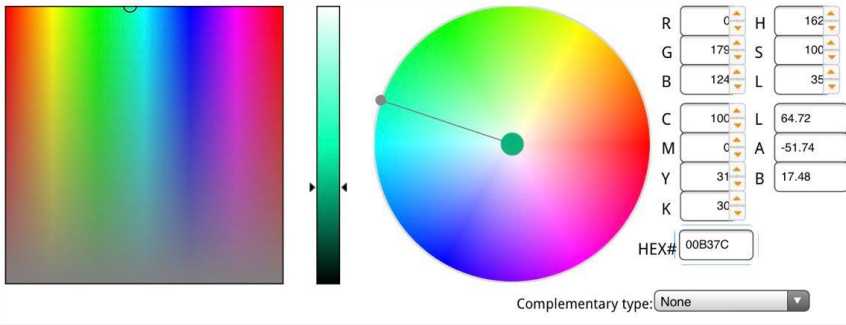
An online tool that features RGB, CMYK, HSL, LAB and Hex codes plus colour sample.

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