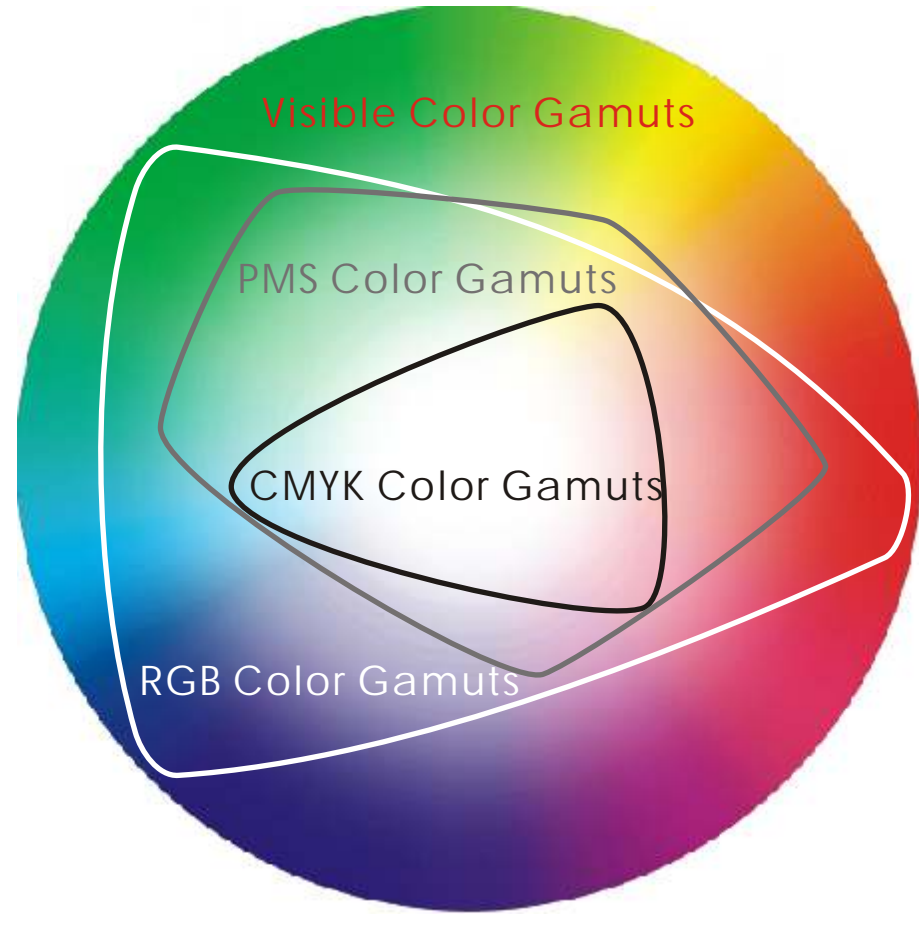


# Basics in Color

## 色域 COLOR GAMUTS

By definition, color gamuts means the scope of color which can be reproduced using a certain output technology. As naked human eye is sensitive to 3 primary visible lights, namely **Red, Green and Blue**, output devices using **RGB model** is capable of displaying the greatest extent of color. However, it is applicable to light emitting devices like TV sets or Monitors only.

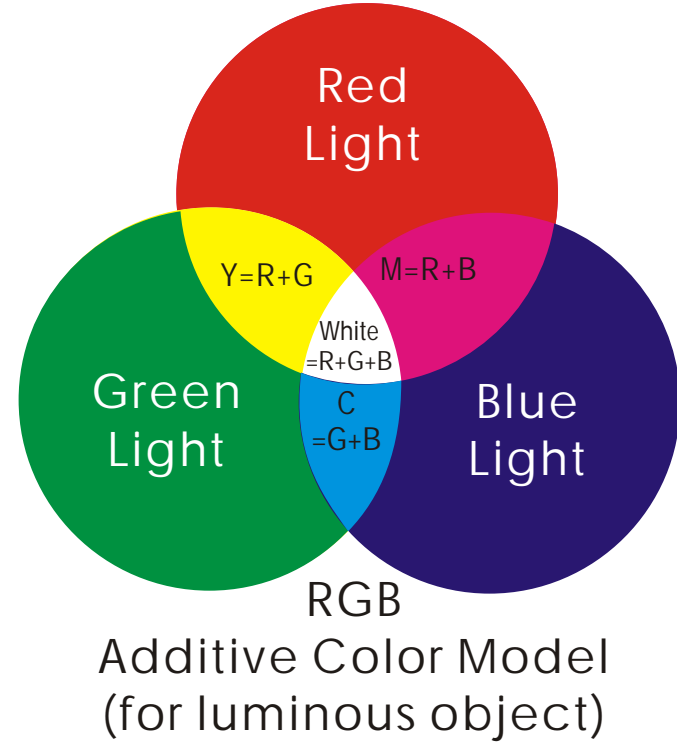
The common printing methods reproduces colors by screening the light reflected from either the base on which the colors are printed or the pigment of color itself. The color gamuts is smaller than RGB model due to the loss and distortion in the process of reflection and filtration except for some PMS colors which can reflect a special section of the color spectrum that even goes beyond the color gamuts of RGB model.



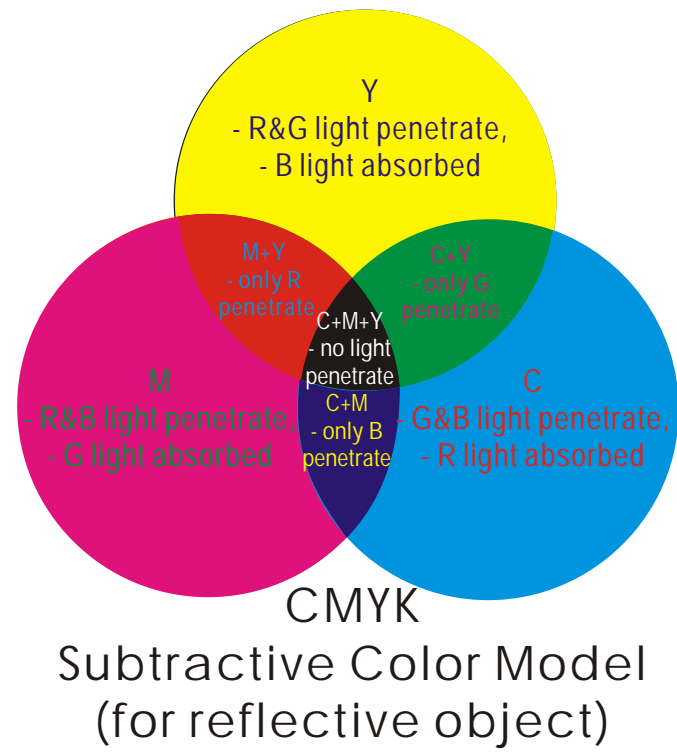
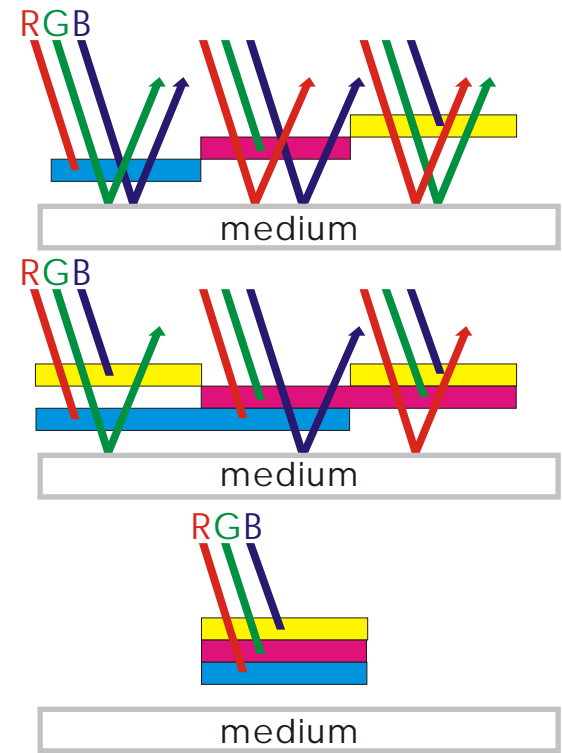
## 色彩模型 COLOR MODEL

### Additive Color- RGB Color Model

RGB color is applicable to light emission devices like TV or monitor which reproduce the color by mixing matrix of light emission dots in Red, Green and Blue together to form a specific color in human naked eyes. It is called additive color because all colors are the mixture of these 3 primary colors. It also produces the greatest color gamut among all available color models except PMS color like gold, silver or some specific material. Experienced Artists should be careful in using RGB model in the process of creation or it would be misleading to their clients and result in dispute over the color correctness of printed matter with respect to the preview image on monitor.



### Subtractive Color- CMYK Color Model



Printed matter cannot emit light; it reflect light from luminous light source only. A traditional painter may apply different colors on his palette to his canvas or paper with paint brush. Nevertheless, printing too many colors on media is not feasible from both the economic and technical point of view. The current CMYK printing method use subtractive color. All colors are reproduced by screening the light (supposed to be white) reflected from either the base on which the colors are printed. The Color pigment of the 4 process color, C,M,Y and K work as filter which "subtract" one primary color from the white light respectively. The above diagram illustrates how the system works. Overlapping different color ink may screen away unwanted primary color from the reflected light. This method only reproduced a smaller color gamuts compared with RGB or PMS color model.

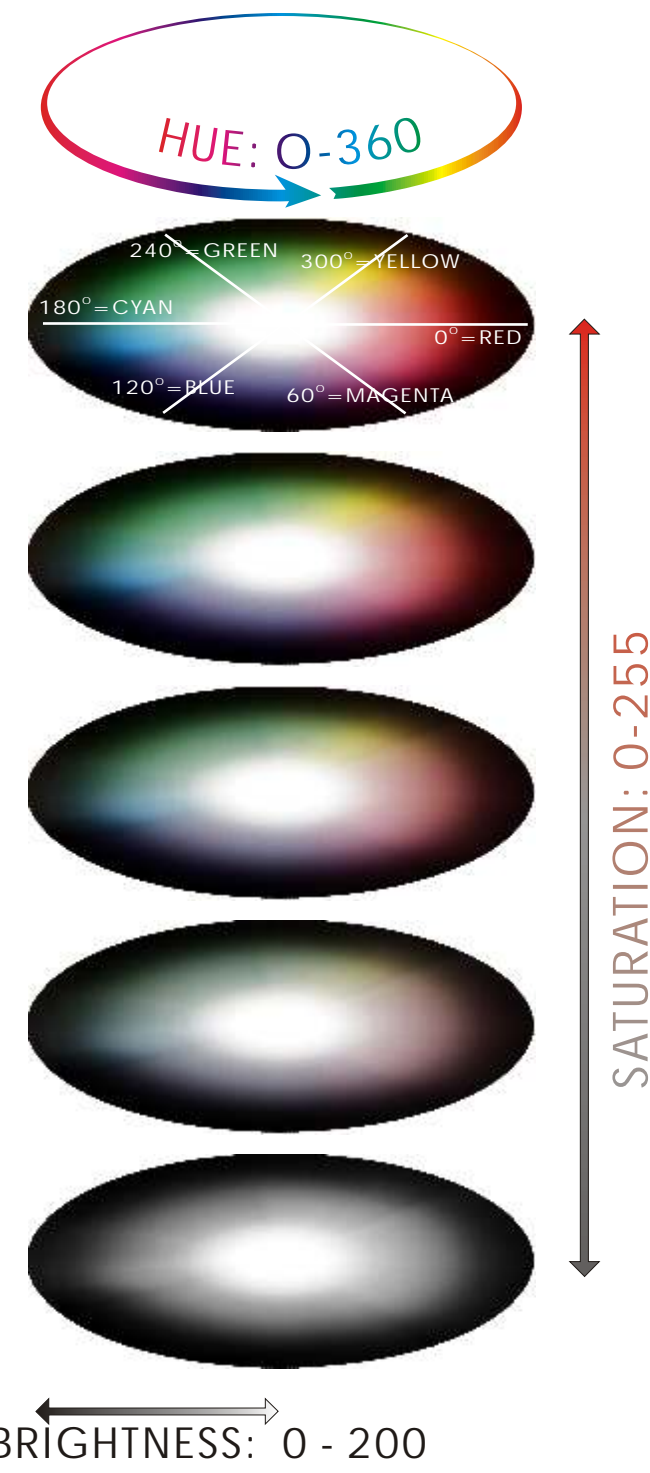
## HSB Color Model

This model defines color by "Hue", "Saturation" and "Brightness".

Hue represented by the relative location of in the color wheel. For instance, if zero degree represent "Red", Magenta, Blue, Cyan, Green and Yellow are 60, 120, 180, 240, 300 respectively. Changing the Hue means shifting the color round the color wheel.

The second property of color is saturation which refers to the intensity of color. It ranges from 0 (i.e. grey) to 255 (i.e. fully saturated color).

The third property is brightness which represent the lightness or darkness of a color. As illustrated in a 3-dimensional model as shown in the diagram, the changes of the three properties of color are visualized by a column of color wheels. This color model is useful in tuning color temperature and brightness especially on TV or monitor.



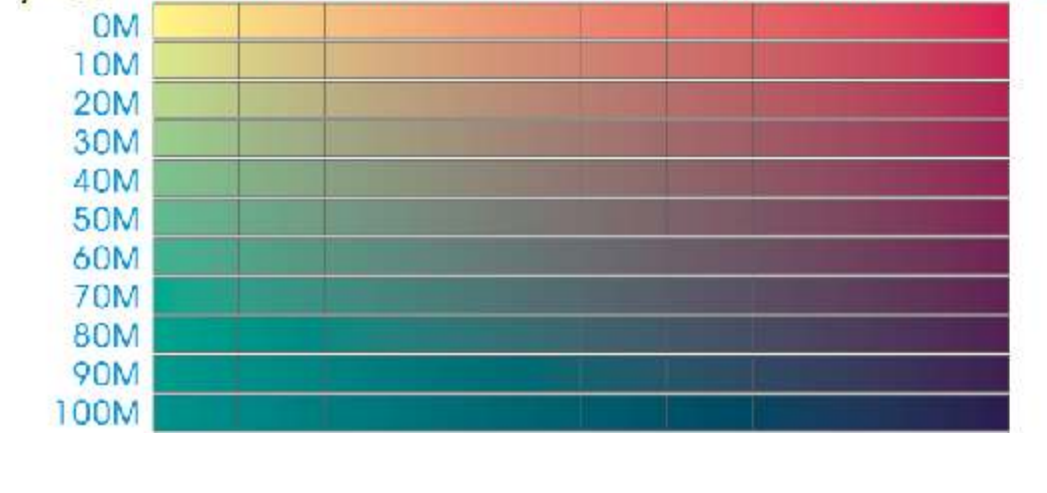
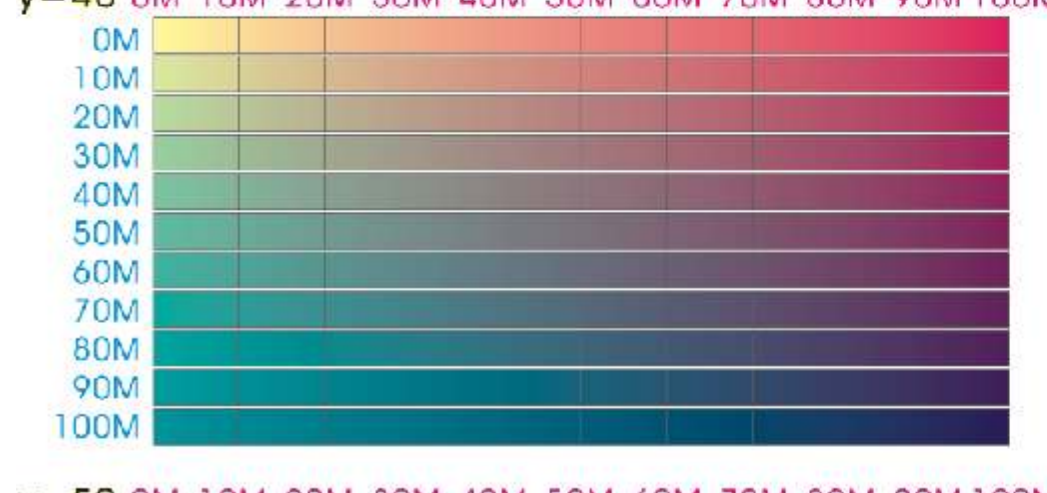
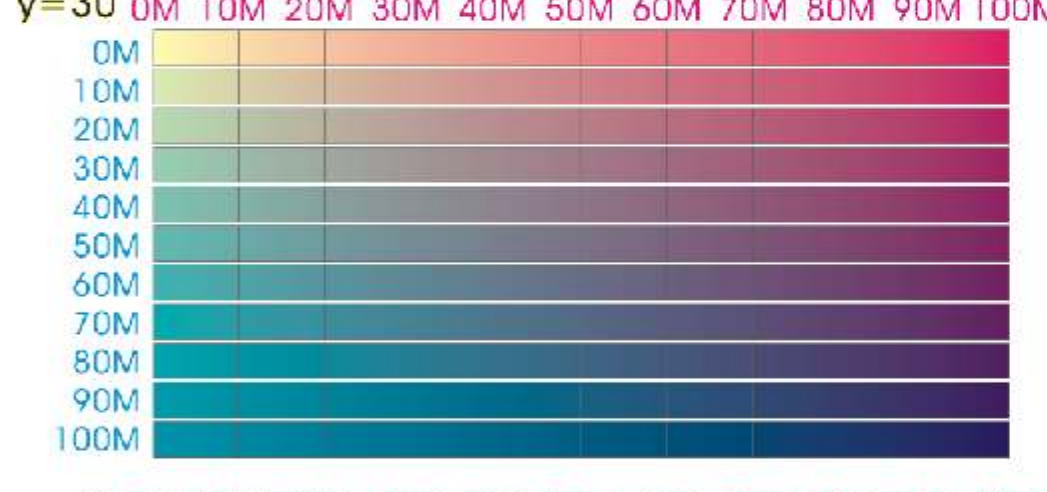
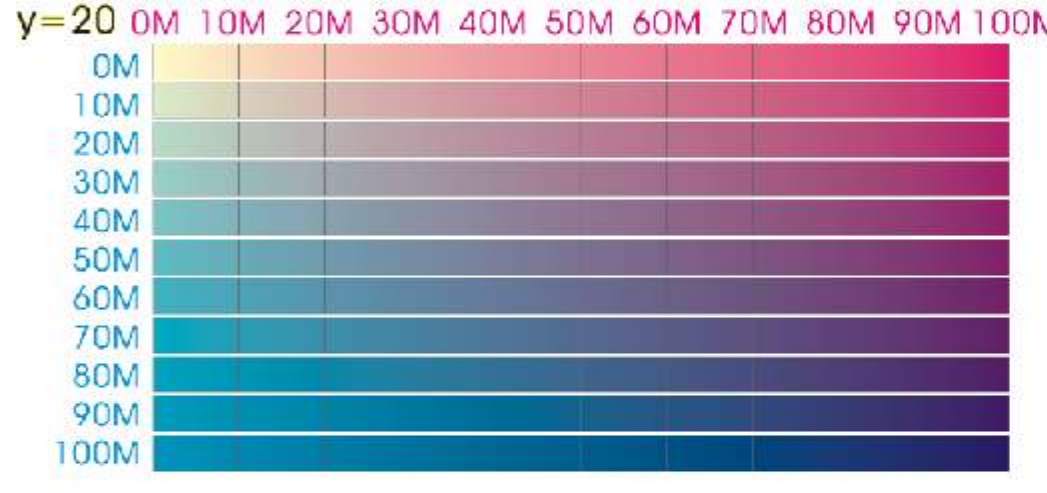
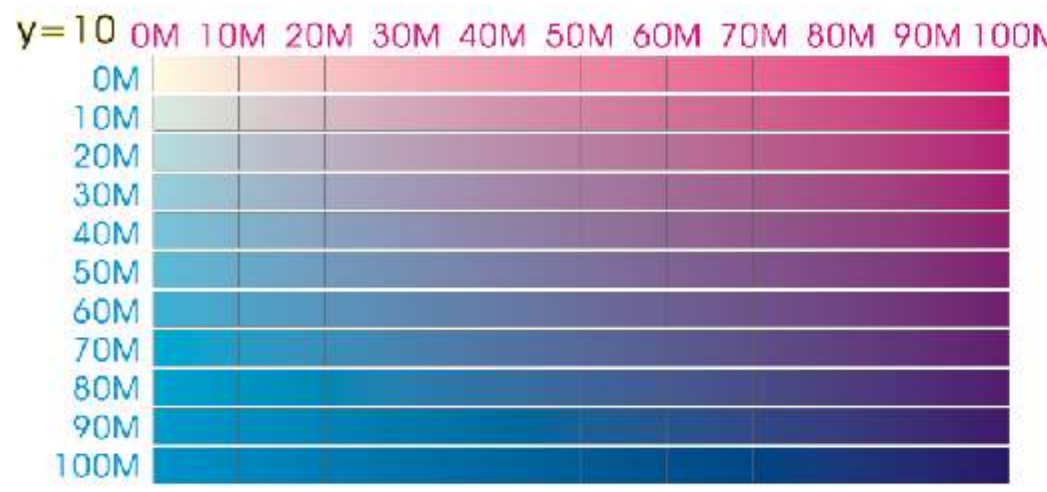
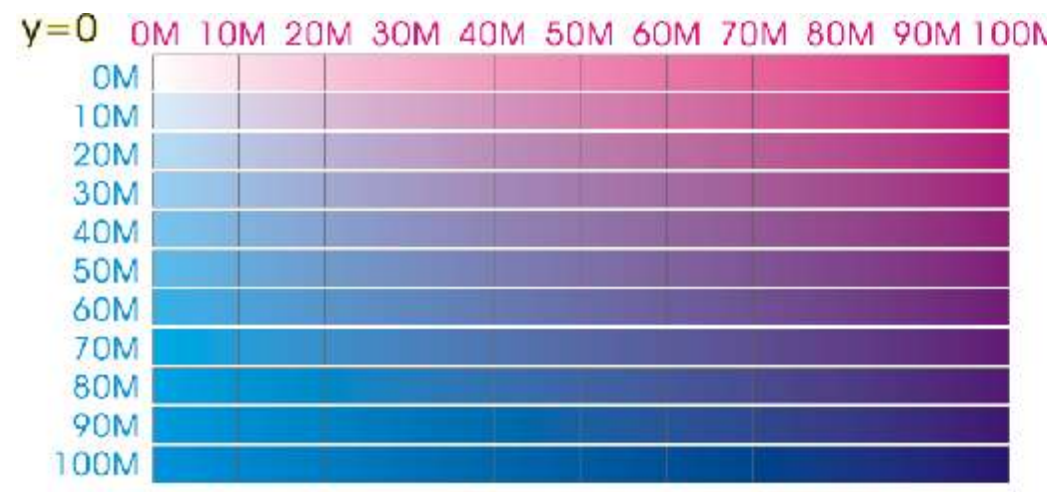
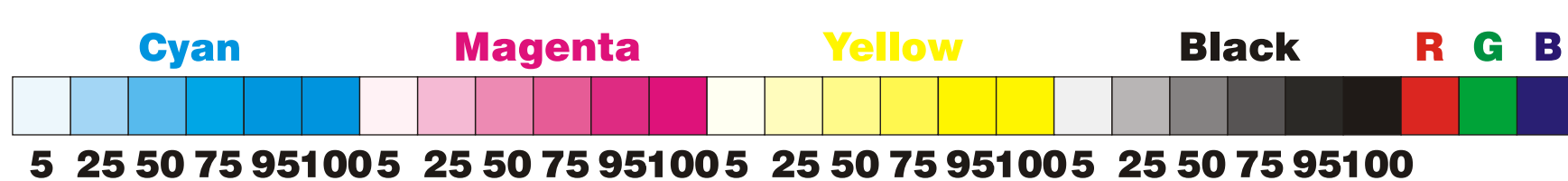
## Spot Color & PMS (Pantone Matching System)

Sometimes the CMYK process colors cannot match a specific color for demanding print job. Spot color will be used. The most renowned spot color system is Pantone Matching System (PMS), which is a trademark system of over thousand colors identified by a unique color code. Every color is a premixed ink according to the formula provided by the vendor of PMS.

## 色彩轉換 COLOR CONVERSION

In the absence of a common algorithm or formula for the conversion of different color models, all digital artworks created for printing purpose should be converted into CMYK model before they are sent to output devices. A significant range of RGB colors or PMS color are not printable as they go beyond the color gamuts of CMYK color model.

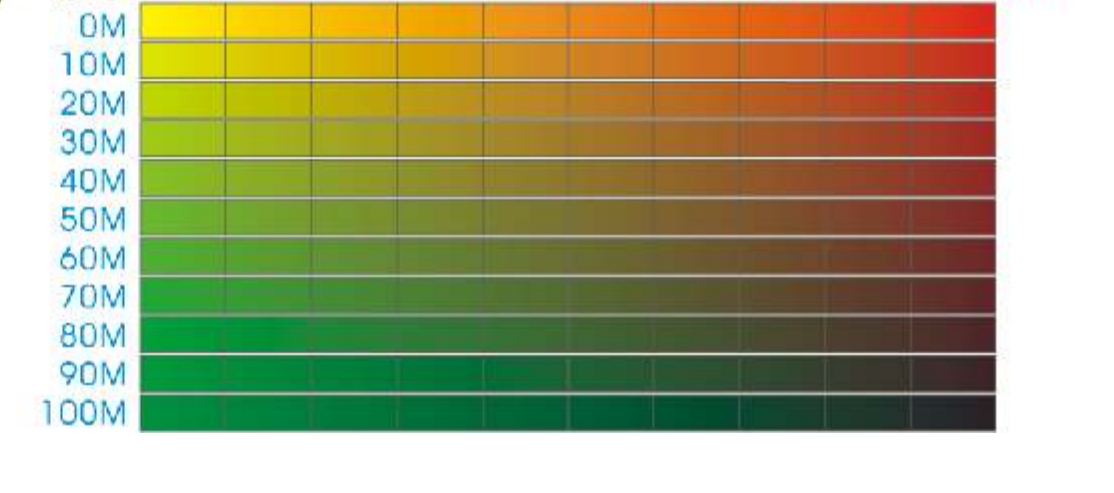
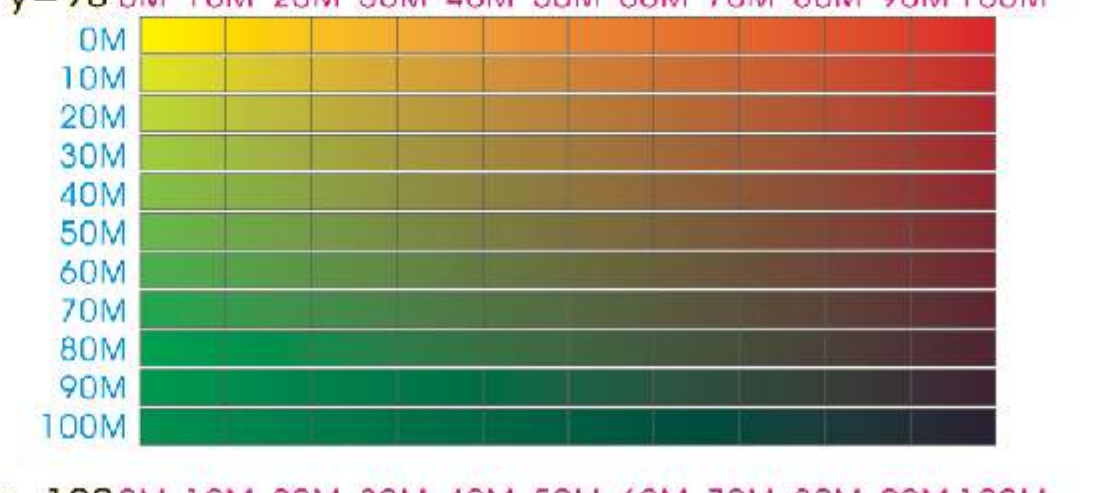
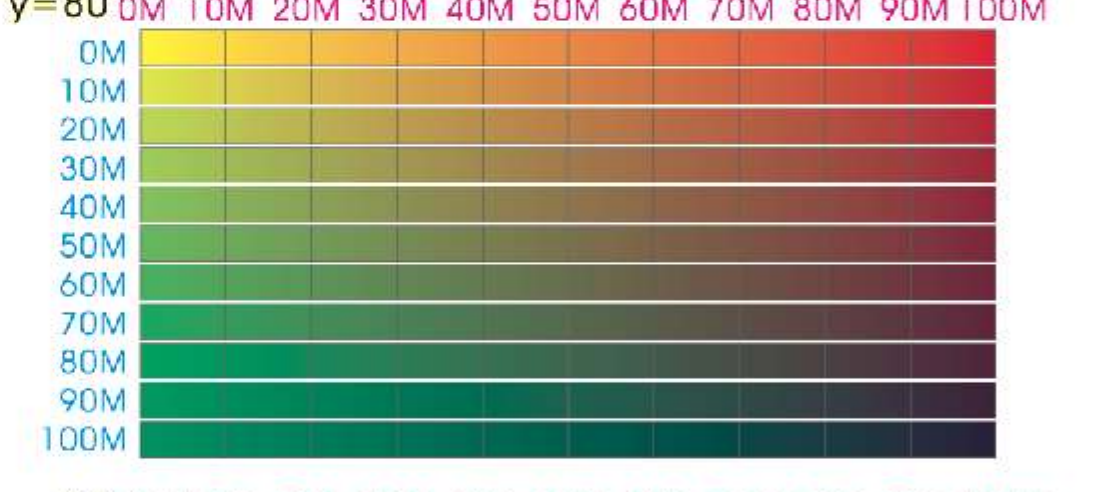
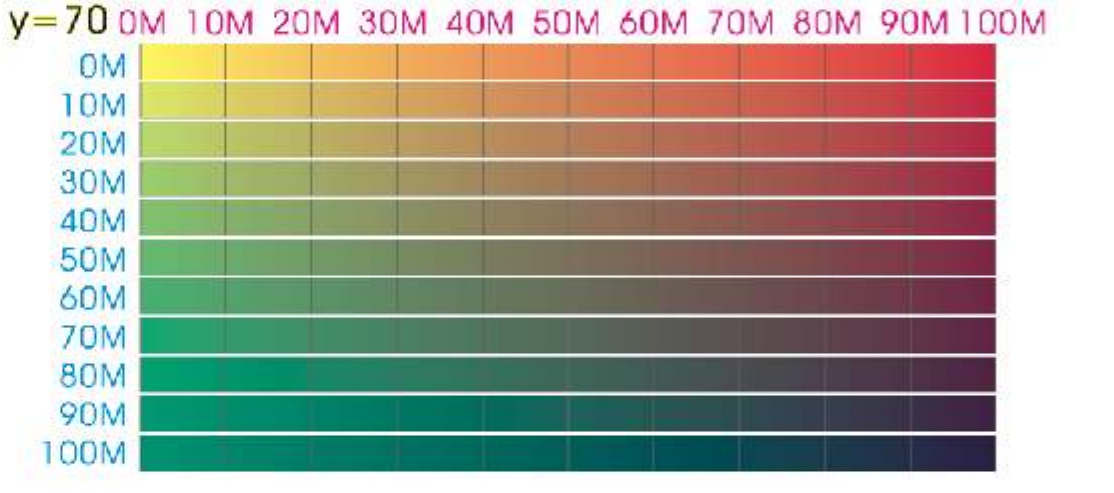
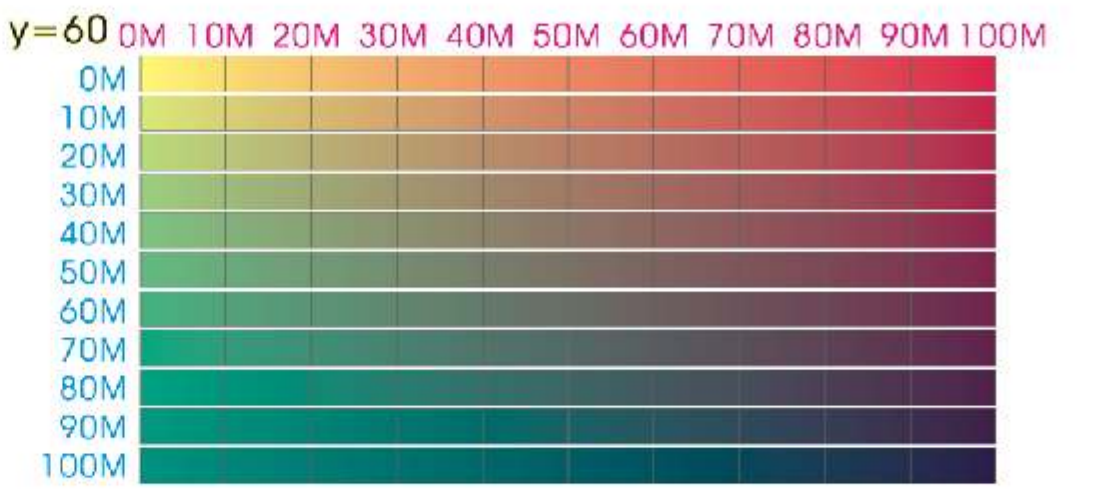
### Color Swatch



Uncle Ming since 1986  
Uncle Ming's Gallery 齊  
www.um-gallery.com  
www.um-gallery.net  
http://www.um-gallery.com  
E-mail: umgallery@hksar.com

### PROCESS COLOR CHART

All possible color combinations in 10% steps: K=0  
Columns=Magenta, Rows=Cyan, Group=Yellow



Uncle Ming since 1986  
Uncle Ming's Gallery 齊  
www.um-gallery.com

### PROCESS COLOR CHART

All possible color combinations in 10% steps: K=20  
Columns=Magenta, Rows=Cyan, Group=Yellow

Uncle Ming since 1986  
Uncle Ming's Gallery 齊  
www.um-gallery.com

### PROCESS COLOR CHART

All possible color combinations in 10% steps: K=30  
Columns=Magenta, Rows=Cyan, Group=Yellow

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Uncle Ming's Gallery 齊  
www.um-gallery.com

### PROCESS COLOR CHART

All possible color combinations in 10% steps: K=40  
Columns=Magenta, Rows=Cyan, Group=Yellow

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### PROCESS COLOR CHART

All possible color combinations in 10% steps: K=50  
Columns=Magenta, Rows=Cyan, Group=Yellow

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www.um-gallery.com

### PROCESS COLOR CHART

All possible color combinations in 10% steps: K=60  
Columns=Magenta, Rows=Cyan, Group=Yellow

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www.um-gallery.com

### PROCESS COLOR CHART

All possible color combinations in 10% steps: K=70  
Columns=Magenta, Rows=Cyan, Group=Yellow

Uncle Ming since 1986  
Uncle Ming's Gallery 齊  
www.um-gallery.com

### PROCESS COLOR CHART

All possible color combinations in 10% steps: K=80  
Columns=Magenta, Rows=Cyan, Group=Yellow

