

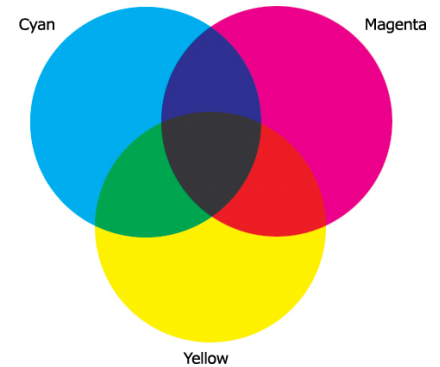
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Color for Offset Printing

CMYK Basics

It's a Subtractive Color System

- Color + Color + Color = Black(ish)
- The “off” color is the color of the printed-upon medium.
- CMYK Printing Pseudonyms: *Process Color*; *Full-color*; *4-color*



It's All About the Ink

- In CMYK, we control exactly where ink is placed on the page, and exactly how much ink is laid down on paper.
- It is possible to place **too much ink** on the page.

Measured in Percentages

- 0% – 100% per ink
 - 0% = no ink; 100% = maximum coverage
- The measurement of the amount of ink in a single spot on the printed page is called **Total Ink**.
 - A common maximum is 280% total ink coverage (though this number varies based on the type of printing press, paper [coated? uncoated?], and other printing conditions).
- Percentages are added together to calculate total ink.
 - For example, a 4-color press can print up to 400% coverage at a single spot.

One Color, Many Formulas

- Unlike RGB and LAB, there are **many different ways** to define a single color in CMYK.
- The reason for this is the addition of a fourth ink: **Black**.

Primary Color Formulas

Magenta + Yellow = Red	Magenta + Cyan = Blueish-Purple	Cyan + Yellow = Green	Magenta + Cyan + Yellow = Muddy Brown-ish

The Role of black

- Adding K to any of these mixes only *darkens* the color

The Unwanted Color

- In creating the primary mixes above, adding the third color ink only **pushes the color towards brown/neutral**.
- Can be used to dull a primary color mix.

Our Cyan ink is Not “Pure”

- Due to unavoidable errors in manufacturing, most cyan inks contain some magenta component
- CMYK Blue must contain more Cyan than Magenta
 - CMYK Blue is approximately 100c 90m 0y 0k
- Neutrals must contain more Cyan to actually be neutral
 - 50% gray is approx. 58c 47m 47y 8k

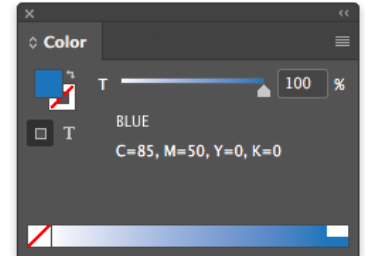
Yellow is the Weakest Ink

- It is easily contaminated by other inks.


Working with Color in InDesign

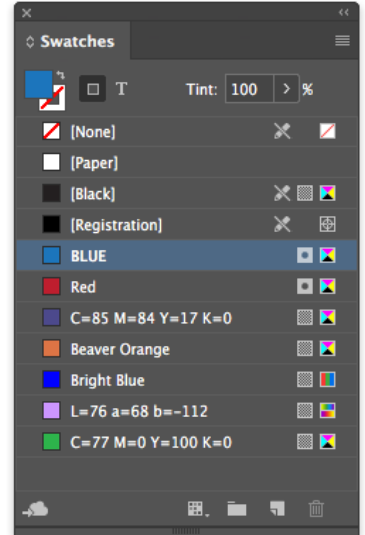
Panels

- Window > Color (F6)
 - Use for “casual” color selection. Do not use to specify a new color for a page element.
 - Best for setting the tint of an existing swatch color.
- Window > Swatches (F5)
 - Used for more “formal, methodical” color selections.
 - This is the panel to **define and manage** your colors.




Swatch Panel Iconography

- Swatches can be either **Process** () or **Spot** () colors.
- They can be defined using the **CMYK** (), **RGB** () or **LAB** () color models.
 - However, always use **CMYK** for print. Period.
 - Hue/Saturation/Brightness (HSB) is also available, but it is just a different way to interface with RGB color values.
- The  indicates the Registration color.

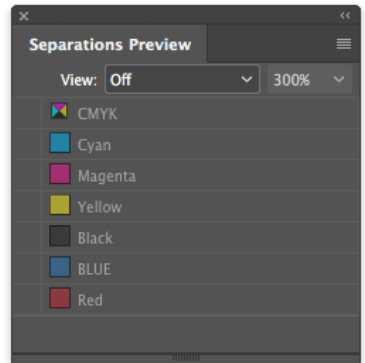


Special InDesign Swatch Entries

- [None]
- [Paper]
 - By editing the [Paper] swatch, you can change the color of the paper as it appears in InDesign.
- [Black]
 - See display options in Preferences > Display of Black (below)
- [Registration] 
 - All inks outputted at the time of printing (including spot colors).

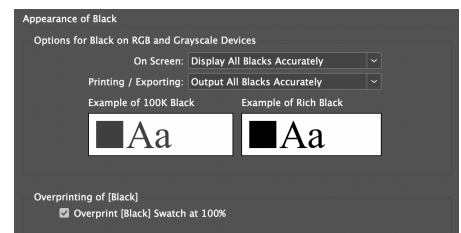
Separations Preview

- Window > Output > Separations Preview
- Displays a preview within InDesign of how each individual printing ink plate will appear when *separations* are sent to a commercial printing press.
- Separations often reveal errors and inconsistencies in the technical make-up of ink in a publication.
 - This enables you to proof and troubleshoot a document *before* it gets put on the press, saving you and your clients money.
- The Separations Preview panel can show the **ink usage** and **total ink** of an artwork area simply by moving your mouse over your document.
- You can correctly view **Overprint** and **Knockout** areas of a layout before printing them out (see next page for more info).



Display of Black

- InDesign > Preferences > Appearance of Black to control its appearance.
- For print work, be sure to set the display of black to *Display All Blacks Accurately* for on-screen viewing, and *Output All Blacks Accurately* for printing & exporting.



Flattener Preview

- Window > Output > Flattener Preview
- A tool to identify and diagnose elements with transparency and rasterization.




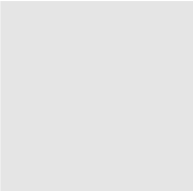





Overprinting & Knockouts

Knockout

- *Defined:* Removing the ink beneath another color.
- Ensures that unwanted ink will not contaminate a desired color.
- Is the default setting in most print circumstances.

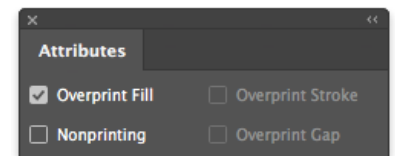
Overprint

- *Defined:* Printing one ink over another.
- Done to help prevent color registration errors, especially with type over a colored background.
- By default, **Black ink printed at 100% overprints** all other inks (since it is the most dark and opaque ink).

<p>Composite Example: 100% black G placed above a light blue background. (65c, 25m, 10y, 10k).</p>				
<p>Fill set to Overprint (default for text)</p>	 <p>C</p>	 <p>M</p>	 <p>Y</p>	 <p>K</p>
<p>Fill set to Knockout</p>	 <p>C</p>	 <p>M</p>	 <p>Y</p>	 <p>K</p>

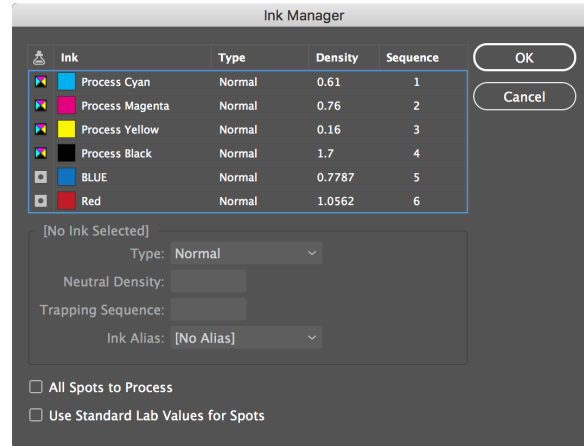
Attributes Panel

- Provides control of overprinting for specific page elements.
- Window > Attributes
- **Overprint Fill** forces InDesign to overprint the fill of an element.
- **Overprint Stroke** forces InDesign to overprint the stroke of an element.
- **Overprint Gap** controls the printing of color applied to the open spaces in dashed, dotted, or patterned lines.



Ink Manager Panel

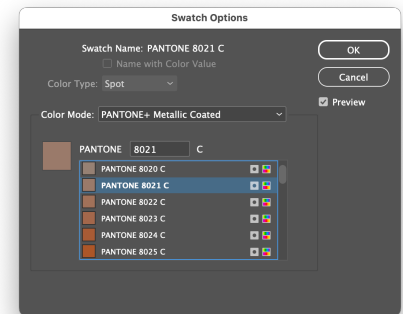
- Swatches Panel Submenu > Ink Manager...
- Provides control over inks when output.
- Allows for the re-mapping of inks, including the conversion of Spot color to process colors.
- Example: CMYK plus two Spot colors



A Quick Note about Spot Colors

Defined

- Spot colors are inks tinted to a specific color.
- This allows for a designer to add color to a document without the expense of using full-color offset printing.
 - For example, a newsletter might use black ink plus one Spot color (blue, etc.)
 - More common these days, spot colors are used in package design to maintain absolute color consistency across products on store shelves.
- Spot colors also allow for the use of specialty inks, like metallic and fluorescent colors that cannot be re-created using Process colors.
- In the U.S., the color standard used for inks is the **Pantone Color System**.
 - InDesign and Illustrator traditionally have a number of built-in color swatches from Pantone, as well as other vendors.
 - However, Adobe's license for these swatches from Pantone expired recently, and convenient use of Pantone swatches now costs \$14.99 a month (!!).
 - That said, it's not *really* necessary to have the full Pantone library within the Adobe apps.



Duotones

What Are They?

- Duotones are a method of reproducing grayscale imagery using multiple printing inks.
- Even after being converted to a Duotone, the image remains, at its core, a Grayscale image. Individual ink channels are not accessible via the Channels panel.
- Duotones extend the tonal range of printed grayscale photographs by reproducing the image using two or more inks.
 - This is why in process print jobs, black and white image are often converted to CMYK before printing (essentially creating a Quadtone image). These images have greater tonal range than images just printed with black ink.
- To create in Photoshop, convert your image to Grayscale, then to Duotone. Save the resulting image as a native PSD for placement into others program.

Troubleshooting Color in InDesign

Make sure your swatches are in the CMYK color mode.

- No RGB or LAB-based colors (unless they are spot colors).

Make sure Spot colors are Spots, and Process colors are Process.

- Only use spot colors intentionally.
- Sometimes imported images will include unwanted spot colors — be sure to resolve these before sending your file to the printer.
- Use Separations Preview to see exactly how many plates you'll be generating.
- Use Window > Output > Preflight to check on the status of your inks.

Don't change the name of Spot colors—ever! This goes for both Illustrator and InDesign.

- Remember that imported .eps and .ai files that contain Spot colors will add their Spot colors to the Swatches panel.

Use tints of existing colors instead of defining new ones

- If the base-color of a tint is changed, all occurrences of that color are changes as well.

Use Window > Output > Flattener Preview to view potential problems area with transparency in your document.

Name your Process colors with the CMYK values.

- InDesign does this by default—use Name with Color Value option.

Remove unused colors from your Swatches panel from time-to-time, and before sending the job in for printing.

- Use the Swatches panel sub-menu > Select All Unused, then delete the selected swatches.

Add existing non-Swatch colors to your Swatches panel automatically.

- Use the Swatches panel sub-menu > Add Unnamed Colors

