

# Alwan ColorHub-

## 2. Normalizing Color Tutorial

### Purpose

This Solution Tutorial will lead the participant through the configuration of a queue to normalize all elements (images and vector, Lab and any RGB and any CMYK files) into one Printing Aim color space. The majority of PDFs received by printers today have elements contained in the PDF that are in different RGB and CMYK color spaces than the actual print condition. And many of these images will show up on printed flats where it becomes impossible to fix one or more images because the fix for one image will destroy the reproduction of another image. Another popular use for this tutorial is to render a digital PDF into one RGB or CMYK space in order to render on a tablet platform consistently. Today, the mixed elements will all render differently, causing a poor tablet color reproduction of the PDF.

### Benefits

To normalize all elements within a PDF into one device independent color space. The software will dynamically provide as many color conversions as necessary to normalize all elements into one color space.

- No more manually converting RGB Files to your targeted CMYK Color Space.
- Uses the Adobe CMM so the results in ColorHub are virtually identical to the same conversion done in Photoshop
- Catches files that most workflows ignore where multiple CMYK files are in different CMYK color spaces which cause problems when they are on the same press form. Can adjust one, but the other images do not react well to the change- every press person has experienced this, but never realized the cause.
- Consistency to customer expectations in how the image should be processed
- Alwan ColorHub builds Dynamic Device links “on the fly” to ensure the Color conversion is of the highest quality and uses the Adobe CMM in the actual conversion which provides the consistent color transformations with any Adobe Product.

### Goal

This tutorial will walk the user through creating a new queue which will be used to normalize the customer supplied files into your targeted color space. If you process the same file on more than one output device, the files will not match unless you can color convert the files to the actual printing condition. This Configuration does this automatically.

### Launch Alwan ColorHub

Enter the activation code if necessary to run ColorHub in Trial Mode (no loss of functionality)

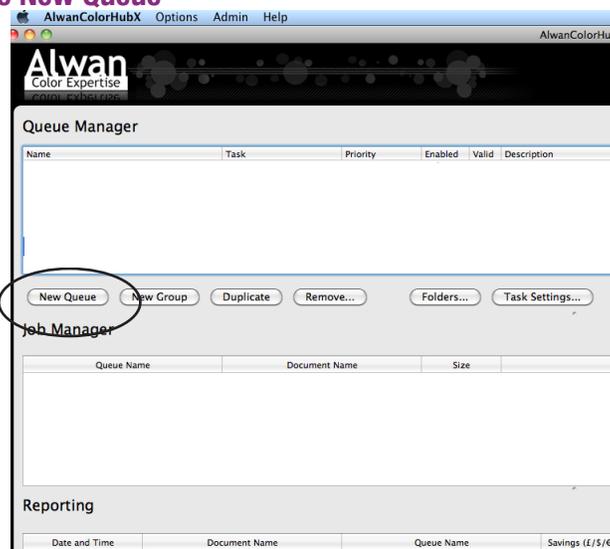
Go to Admin pull down menu

Choose “Enter Demo License”

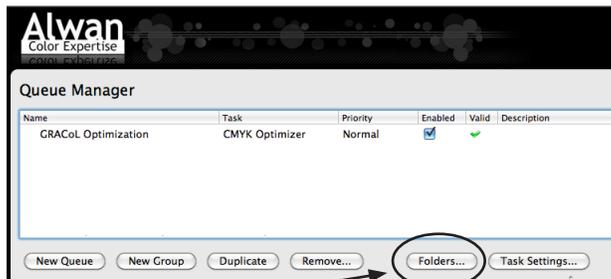
Copy and paste license code into this dialog. License codes are date stamped, they are only good for a short period of time 1-4 weeks.

And the code only works for a maximum of 60 days once the software is activated, only activate when you know that you will have time to test.

### Click on “Create New Queue”



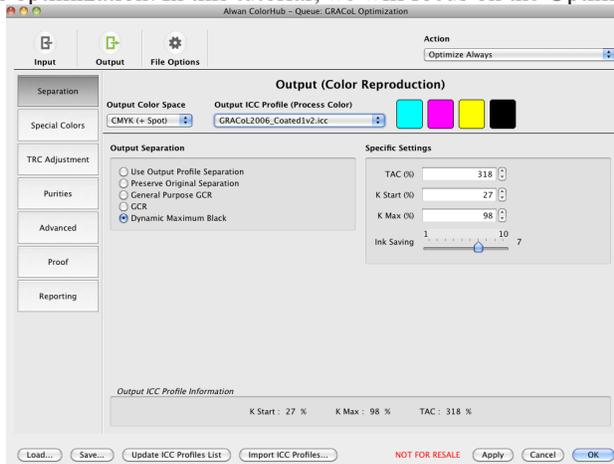
Double click on the name in the Queue window and rename it to GRACoL Normalization (assuming your Printing Aim is GRACoL, if not substitute accordingly).



Next Click on the button called “Folders,” for testing purposes make a folder on Desktop called GRACoL Input, and choose to include all other folders inside your main input folder. You can always change the folder structure later to accommodate your workflow. Click the check box next to the Original Folder, this will automatically make a copy of your file, so you do not need to worry about overwriting original file while testing.

### Click on “Task Settings” button-

This opens the heart of the ColorHub Interface. ColorHub performs two main functions, first Color Conversion and the second function is optimization. In this tutorial, we will focus on the Optimization of ColorHub settings.



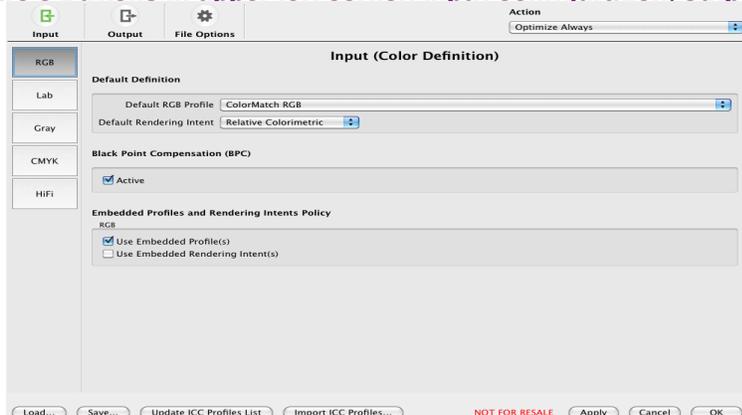
### Click on “Load” button on bottom left side of menu

Load a Pre-Set Configuration which will populate all the optimum settings to provide accurate color conversions. All you need to do to get started is to make sure the Output Profile setting is relevant to your actual output condition. Most other settings can remain as default, read on to learn about more about the capabilities of Alwan ColorHub.

### Presets that are available-

- Normalize everything in PDF to one CMYK Color Space- This is a standard setting which virtually every workflow system will benefit from by ensuring that no two images in different color spaces will be printed on the same form. This is common since many customer supplied PDFs have embedded images in different color spaces.
- Normalize everything in PDF from SWOP to Newsprint - Newspapers honor the appearance of the advertising, but reduces the TAC and changes the color to adapt to the darkness of newspaper and the difference in tonality and gray balance.

### There are 3 Buttons in upper left corner: Input Configuration, Output Configuration and File Options



## Input Configuration -RGB

Provides for options for handling RGB objects within a PDF File, if an element within the PDF is in RGB Color space you can honor the embedded profile/rendering intent (recommended) and ensure BPC is Active (recommended) and choose what profile to assign objects with no embedded profiles.

This is the profile that ColorHub will use if the included RGB element within the PDF does not have an embedded profile. My preference is ColorMatchRGB. Even though sRGB is more universal, most sRGB files render better (in my experience) using ColorMatch versus sRGB. Conduct your own test, if you have a calibrated monitor, open multiple images in Photoshop. Use the ASSIGN Profile command (under Edit menu) and assign sRGB, then assign ColorMatch and determine which one renders your images to your liking.

## Input Configuration -Lab

Provides for options for handling Lab objects within a PDF File, if an element within the PDF is in Lab Color space you can honor the embedded profile/rendering intent (recommended) and ensure BPC is Active (recommended) and choose what profile to assign objects with no embedded profiles.

## Input Configuration -Gray

Provides for options for handling Gray objects within a PDF File, if an element within the PDF is in Gray Color space you Process as K only (recommended) OR you can honor the embedded profile/rendering intent (recommended) and ensure BPC is Active (recommended) and choose what profile to assign objects with no embedded profiles.

## Input Configuration -CMYK

Provides for options for handling CMYK Objects within a PDF File, if an element within the PDF is in CMYK Color space you can honor the embedded profile/rendering intent (recommended) and ensure BPC is Active (recommended) and choose what profile to assign objects with no embedded profiles. If you are printing to a GRACoL color space, choose GRACoL as the Default CMYK Profile.

This is the profile that ColorHub will use if the included CMYK element within the PDF does not have an embedded profile. It can also be the profile of the Printing Aim that you want your PDF to simulate. My preference is GRACoL CMYK for most commercial work. If I am outputting to devices with a larger gamut than GRACoL and we want to take advantage of the larger gamut, I will choose the profile with the larger gamut i.e. RPC7, or ICC Extreme. Even though the majority of files produced in North America are technically in SWOP color space, GRACoL is larger and shares the same tonality and gray balance so you will get a higher quality result by choosing a larger gamut default profile.

## Input Configuration -Hi Fi

Provides for options for handling Hi Fi Objects within a PDF File, if an element within the PDF is in Hi Fi Color space you can honor the embedded profile/rendering intent (recommended) and ensure BPC is Active (recommended) and choose what profile to assign objects with no embedded profiles.

Clarification- Embedded profile for PDF versus an embedded profile inside an RGB or CMYK image within a PDF. PDFs can have an embedded profile called an "Output Intent." This Profile represents the targeted print condition and this is how Acrobat knows how to preview the PDF on the Display. But images inside the PDF can and often do have different embedded profiles than the "output intent." Alwan ColorHub will honor every embedded profile in every image and build a device link on the fly to convert each element independently into the targeted Printing Aim color space.

If your color conversion is targeting a small gamut color space, or the substrate has a darker hue, brown/yellow- consider only selecting the RGB and CMYK "Use Embedded Profiles" leave "Use Embedded Profiles" unchecked.

Sample of large gamut color spaces; GRACoL, SWOP RPC 4-7, Large Format on Styrene, Cardstock, Most Common digital presses  
Sample of small gamut color spaces: Newsprint, RPC 2-3, Any device with Substrates with an L\* value less than 85

## Special Colors

This button allows for vector color builds to be protected from Optimization (Black replacing CMY) and can be used to convert special color builds to a different build value. Common build replacements include ensuring that equal builds of RGB get converted to K only (optional tolerance to allow for unequal values to convert to K). Also RGB values of 0,0,0 will convert to 100% Black. Registration black can be converted to a rich black, either a specific CMYK build, or the software will generate an optimum build which maximizes darkness without exceeding the TAC limit. In addition, four color black text values can be entered to convert to black only which greatly improves the printability of this type of customer supplied data. Ideally import the "Hunter Special Color List" to have a default set of values.

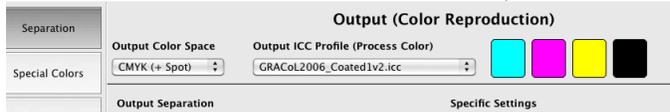
## Spot Color Button

This provides a "Named Spot Color" to be replaced as a specific build based on the available channel data of the output profile. This is extremely helpful in converting spot colors for a specific digital device.

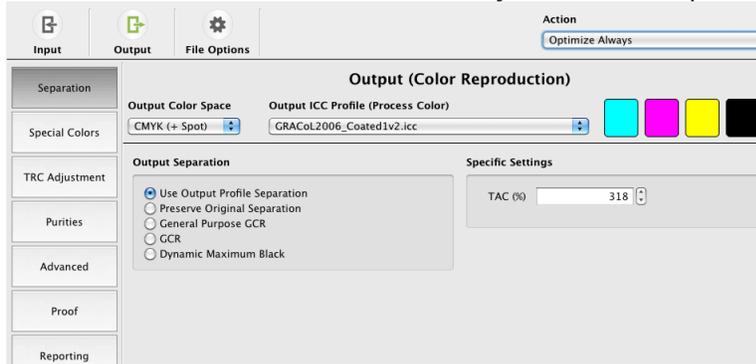
# Output Section

## Click on the Separation Tab

This tab determines the color build of the processed files. You can choose what color space you are outputting to, RGB, Lab, Gray, CMYK, Hi Fi. Ideally this output profile represents the actual output condition of the device. If you do not have a profile of your device, then choose a profile that represents how your device is calibrated, ie G7 methodology on coated stock refers to GRACoL profile. Choose the 2006 version if M0 measurement, choose the 2013 version if M1 measurements.



If you purchased the ECO version of Alwan ColorHub you will have 5 separation choices:



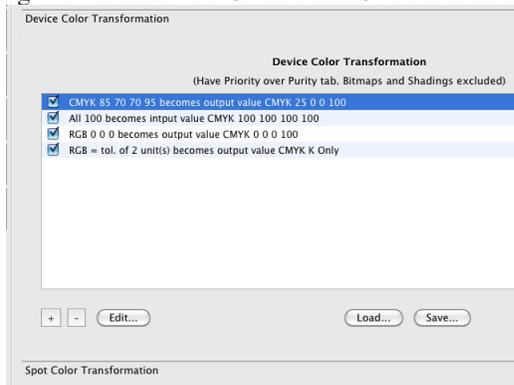
Choose the setting that is most relevant for your needs:

- Use Output Separation- Will use the separation settings in the profile defined in the Output ICC Profile pop up menu
- Preserve Original Separation- Will use the separation settings in the profile defined in the relevant INPUT ICC Profile pop up menu
- General Purpose GCR- Will use a medium level of GCR on the separation
- GCR- Provides 8 levels of GCR Curve settings which influences how much black replaces CMY in the file
- Dynamic Maximum Black- Pixel level evaluation of the file providing maximum Black replace of CMY.

Next, define the “Output Separation” mode. For maximum Optimization choose “Dynamic Maximum Black.” If the output device always printed as the profile definition, then you would always use “Level 10,” because you would *not* see any visual difference in the result of these numeric settings. But output devices do not always print as expected (dependent on level of process control), so customizing this setting can create a file which is much more forgiving in a print environment with a lot of variation. Read the Alwan Color Optimization paper for more information related to using the Optimization settings.

## Special Color Tab

This dialog allows for Vector Color Build Substitution or Pass through settings and Spot Color Conversions



These are common settings, first will convert four color text built with 85,70,70,95 to 100K only; The next setting “All 100” will take elements defined as registration black (often done by customers to get a richer looking black without realizing the consequences) and convert to an INPUT value of 100,100,100,100 which will then run through the CMYK to CMYK conversion defined inside ColorHub and will not violate the TAC setting, but will provide the richest, darkest black. The next setting with RGB 0,0,0 will convert elements defined in Microsoft (and other) applications and automatically convert to Black only, ideal for text. The next setting will take any objects defined with equal amounts of RGB and convert to K only.

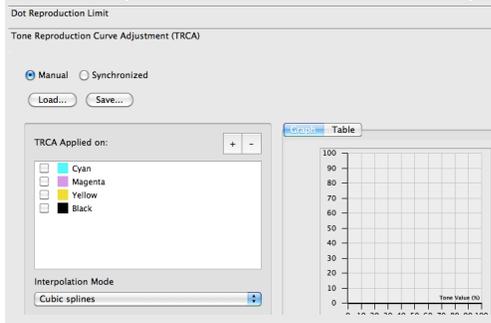
## Spot Color Substitution Table

This dialog allows you to configure your spot color policies- preserve or convert. In addition you can import custom Spot Color conversion tables from other applications and apply them on a global basis on all of your PDFs. Will provide conversion tables to any

color space. If a Spot color is not defined in the table with a check box next to the name, ColorHub will pass the color through on its own channel, honoring the spot color intent.

## TRC Adjustment Tab

This tab allows for minimum and maximum dot and allows you to import a manual or automatic (from Alwan PrintStandardizer) plate curve or Tone Reproduction Curve to the PDF as part of the workflow.



## Purities Tab

The Purities tab allows you to protect many levels of purities to ensure ink builds stay pure. This is desirable when performing Color conversion between devices with similar color spaces. YOU DO NOT want to do this when the devices do not have similar color spaces and you are wanting to make one device match another. For instance, most digital presses blue overprint is 12 delta E different from GRACoL. Using Alwan ColorHub you can make the digital press match GRACoL but you do NOT want to protect the blue overprint, you want to let Alwan convert the Blue in order to match GRACoL better.

## Advanced Tab

The Dynamic Device Link Profile creation parameters allows for the editing of the DVLP creation parameters for ColorHub. This controls the accuracy of the color match (defaulted a .5 dE), and the resolution of the Device Link table, defaulted to 21.

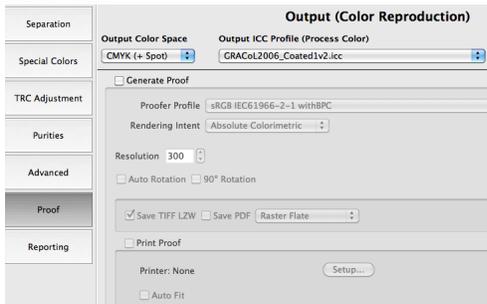
The Dynamic TAC setting, allows for editing the amount of area that is limited by Total Area Coverage. Some devices benefit from a higher TAC (better dynamic range) but with too much ink coverage, it can cause show through and set off problems. This setting allows for the best of both, max TAC in smaller areas (womans eye make up) but force the TAC to a lesser coverage with high coverage images (Harley Davidson type add)

Linework/Vector Management setting allows for treating Raster elements independently of Vector elements.

Image Enhancements allows you to apply Photoshop Unsharp masking to the entire page. This is great when printing on uncoated paper stocks.

## Proof Tab

This added option allows the user to Rasterize the result so you can output to an output device as a bitmapped file. Can be used with Printer Drivers.

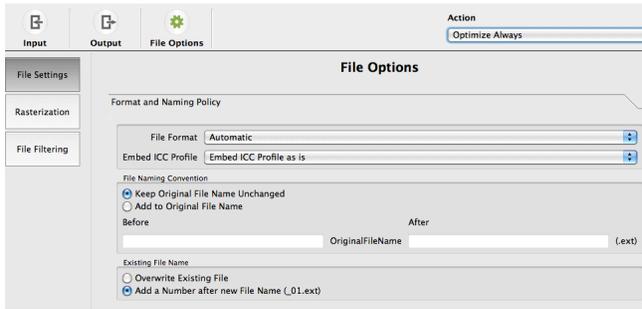


## Reporting tab

Click on the Check box to turn on ink consumption statistics. This will slow the program down slightly, but will provide great information related to amount of ink saved and dollar amounts if filled out appropriately. Once the program has proven its worth, you can turn off this setting to speed up throughput. Refer to the ACH1 Tutorial on Optimizing files for more information on this tab.

## File Options on top of Dialog box

Default Naming convention is to put an \_01 on the end of the file. This allows you the ability to process the same file multiple times, changing the setting every time and the software will add 1 to the counter every time (\_02, \_03 etc) so you can track the results easily.

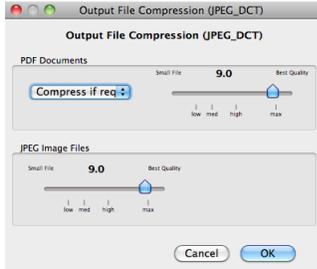


## File Setting Naming Tab

### Format and Naming Policy

The default file naming is to append the name of the original file with an \_01 the first time the file is processed and will progressively count up (\_02, \_03 etc) every time you reprocess the same original. This is helpful when you are testing the results of different settings.

## Compression



The default is “Compress if Required.” Keep it here unless you have a reason to change it.

## Rasterization Tab

Allows ColorHub to flatten certain elements that are necessary in order to “optimize” the file. Can also be used to flatten certain types of transparencies that are not compatible with older RIPs and workflow programs. The resolution of 900dpi has not caused any artifacts and stair stepping even when printed at the highest possible resolution. Understand that the higher the DPI, the longer the processing time and the larger the file, so please use the minimum DPI for your process to minimize time and size of files. Digital Presses to date can easily run at 200-300 with no loss of quality. Start with 200 to see if you can see any stair stepping (jaggedness of sharp lines and text) to determine if this will work for your workflow.

These settings only impact flattening PDF files. These settings can easily be added to other settings available in ColorHub to perform Color Conversion, Color Optimization and PDF flattening when combining the settings together.

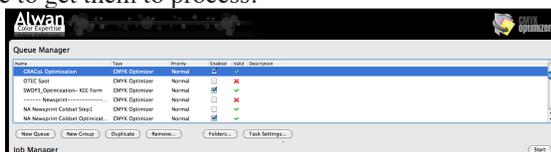


## File Filtering Tab

This allows you to substitute or replace the PDF output intent with a different output intent.

Click OK in lower right corner to exit the Task Settings dialog

Make sure you have a green check mark  next to your queue showing you that it is valid, then click on the START button on the far right side of the Job manager to start processing files that go into the job folder. You can also drag and drop PDFs on to the Queue to get them to process.



You are ready to start “normalizing” your color files.