White Balance and Colour Calibration
Workflow in Lightroom 7.3 release (April 11th 2018) with the ColorChecker Passport Photo 2

White Balance and the Temperature of Light

One of the basic ways of controlling colour when we are taking a photograph is to know what the lighting conditions were when the image was taken.

All digital SLR cameras have what is termed a 'White Balance' (WB) setting, this is generally a preset (Direct Sunlight, Flash Cloud, Shade, Auto, etc) that can be set from either a button on the camera or within the on-screen menus. This usually set to Auto by default. In this case the camera will assess the scene and set what it thinks is the appropriate white balance for the individual shot.

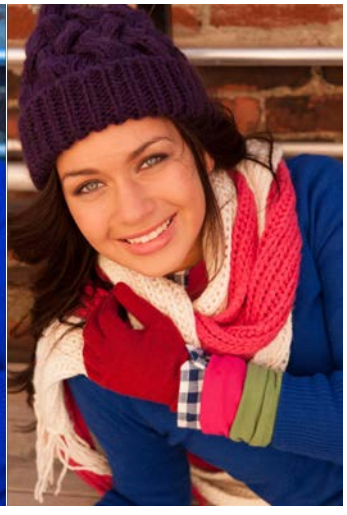
White balance can also be termed as colour temperature and has a significant effect on how your images look when processed through a graphics application. The images below are all the same but for the white balance that has been applied when converting the RAW images through Adobe applications.

Which one is correct?

Daylight.jpg

Auto.jpg

Tungsten.jpg

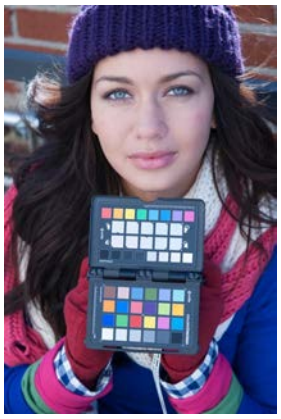


Shade.jpg

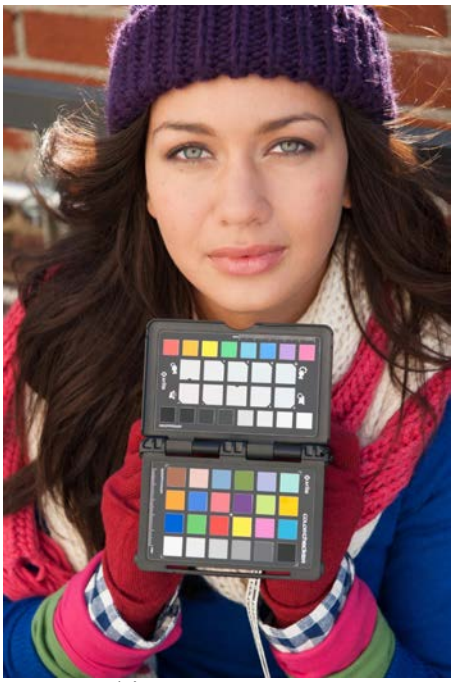
As you can see each one of the images has a different colour tone from warm to cold and visually it is difficult to know which to use to give the correct skin tone etc in the image.

Even the 'auto' setting is probably not setting the white balance correctly.

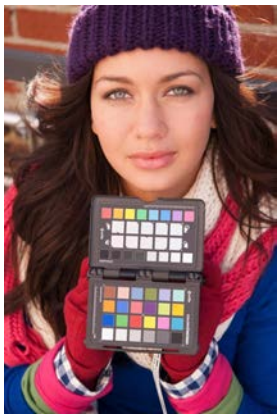
The only way of knowing that the white balance truly reflects the color temperature of the light that the image was shot in is to use a neutral grey card and capture an image of it in the lighting conditions.



Auto.jpg



Measured.jpg



Daylight.jpg

Tungsten.jpg

Shade.jpg

The images above again illustrate how different camera white balance settings can have a profound effect on the colour tones you view on your computer screen when editing.

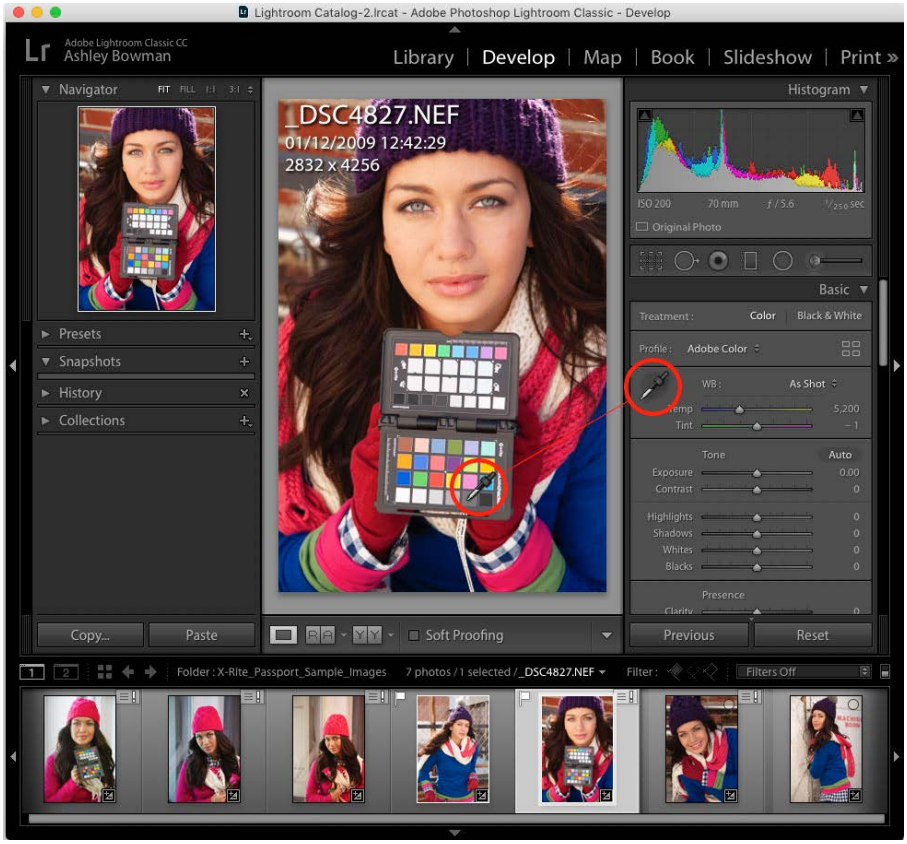
The only image that truly reflects the color temperature of the lighting conditions the image was shot in is in the centre. The central image has had its white balance set using one of the neutral greys in the bottom strip of the ColorChecker Passport, using an image taken at the start of a typical shoot..

As the bottom strip shows neutral greys, any light falling on the patches will reflect the temperature of light falling on to the subject. So when the white balance tool in Adobe Lightroom (see images below) is placed over a patch and clicked, it informs the application that this is the desired neutral for the image and the correct temperature compensation is set for the shot.

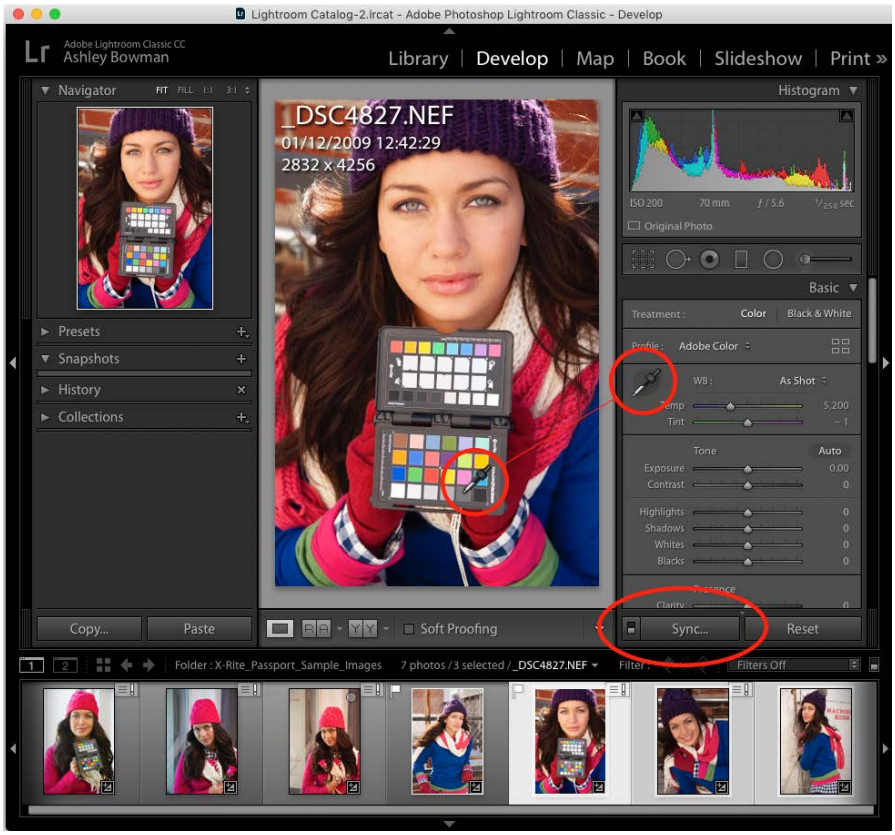
Applying a White Balance to RAW Files in Adobe Lightroom.

To apply a custom white balance from a reference chart in Lightroom do the following.

Select the image containing the ColorChecker Passport target (or other neutral reference card) and select the ‘Develop’ module. In the ‘Basic’ section click on the ‘WB’ eye dropper tool and click on one of the neutral grey patches (4th patch 18% is ideal - see image below).



Select the image and select the 'Develop' module. In the 'Basic' section click on the 'WB' eye dropper tool and click on the neutral grey patch (4th patch 18% is ideal).



If you want to apply the white balance across multiple images just select your key image first then add the other images in the film strip that you wish to apply this white balance to and click Sync.

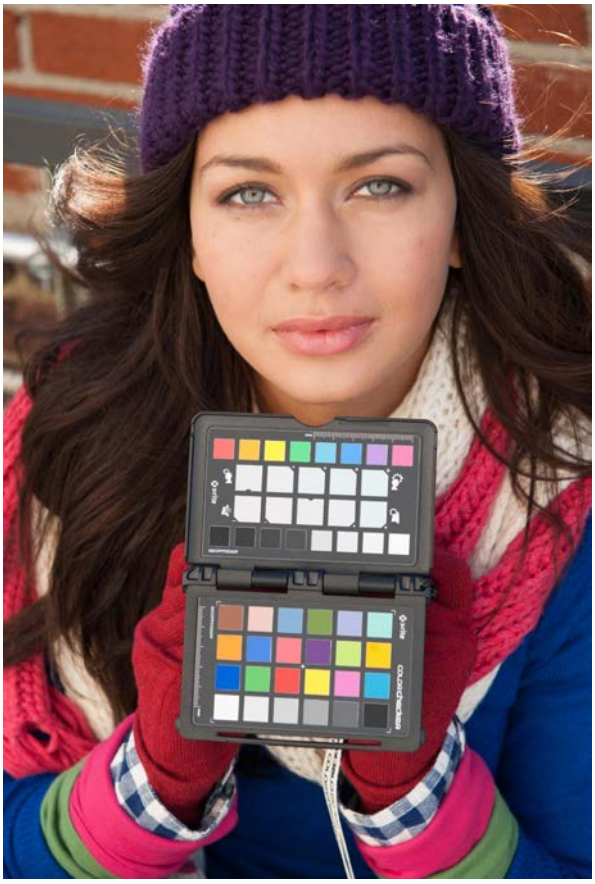
When clicked, the Sync dialogue appears just click the 'Synchronize' button to copy the white balance to all the images selected in the filmstrip.

As you can see, setting the correct white balance in your images can really help to get correct basic colour in your workflow. This can save a great deal of time when processing your photographs within the Lightroom. Other image editing applications have similar white balance tools, so the Adobe workflow described above can be easily adapted for the specific software.

Camera Calibration in Adobe Lightroom 7.3 with ColorChecker Passport Photo

Creating DNG Camera Profiles in Lightroom

To create a good quality DNG profile it is best to start off with a correctly exposed RAW image that contains the Color Checker Passport. The main target should take up at least 20% of the frame and be evenly lit by the same light that is falling on your main subject. (see image below).



As mentioned above it is important to get a correctly exposed RAW image of the target. This can be difficult due to time constraints and conditions, so it is advisable to bracket the exposures on the images containing the target. So once back home editing the images you can be sure that the correct information is available to create the best DNG profile possible.

As a rule of thumb, the 4th neutral grey from left to right on the bottom strip (circled in the image) should be exposed to 50% RGB in Lightroom. This can easily be checked by placing the cursor over the 4th neutral grey and looking at the histogram to see the RGB values and selecting the image closest to the ideal readings.

Once you have taken the initial bracketed shots of the target you can then go ahead and shoot the rest of the images in that lighting setup. NB - If the light changes re-shoot the target.

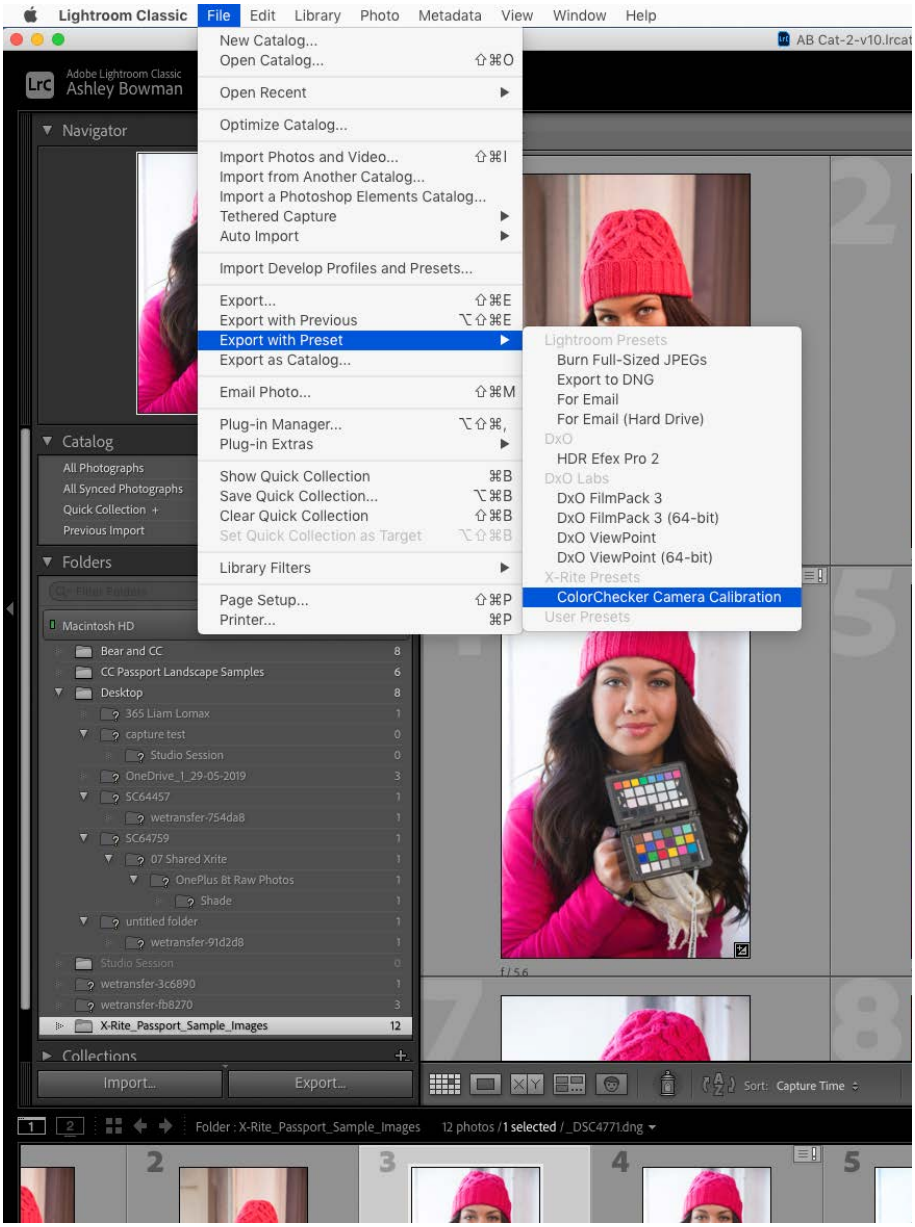
Creating and Applying Profiles in Adobe Lightroom

The ColorChecker Passport comes with a plugin for Adobe Lightroom and, once installed, it could not be easier to create accurate custom DNG profiles for your camera and lens combination.

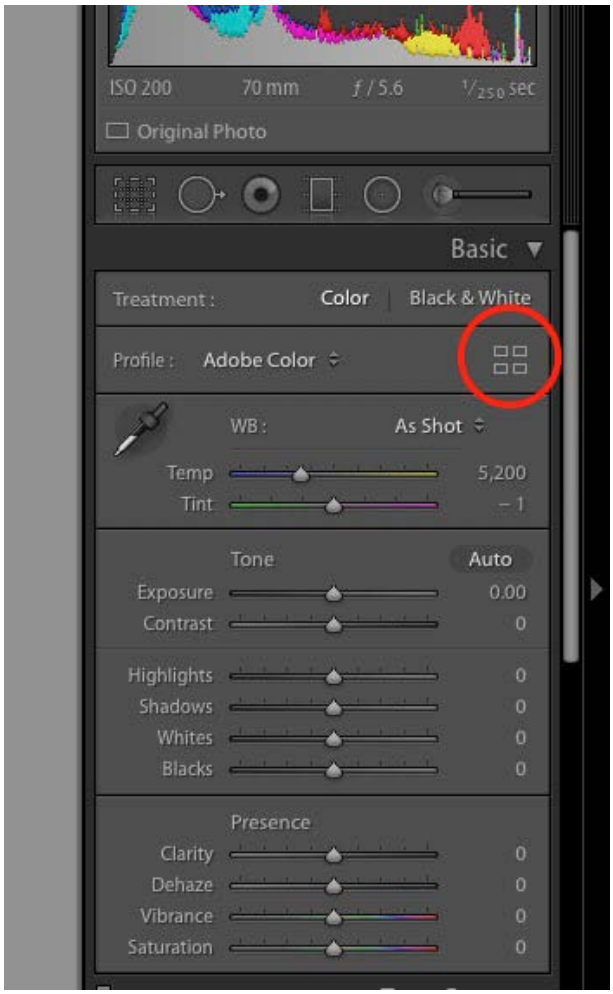
Initially import all the images from the session into Lightroom. Once imported you can then start to create DNG profiles from the initial target shots.

After the images have been imported create the profile in the following way:

In the Library view select the best exposed image containing the ColorChecker Passport target and select: File > Export with Preset > Color Checker Passport - (see image below).
Once this is selected a dialogue will appear prompting a name for the profile. Name the profile (i.e. camera name Date, Shoot etc). Making sure you do not use any special characters in the text as this can confuse the Adobe applications and the software may not recognise the new profile (underscores are OK if you want to separate names etc)



The plugin will then go off and sample the colours from the RAW image and calculate the DNG profile. A progress bar appears the top left of the Lightroom window and after 30 seconds or so it will inform you that the DNG profile has been created. However, as Lightroom only loads profiles on start-up it must be re-started to activate the new profile.

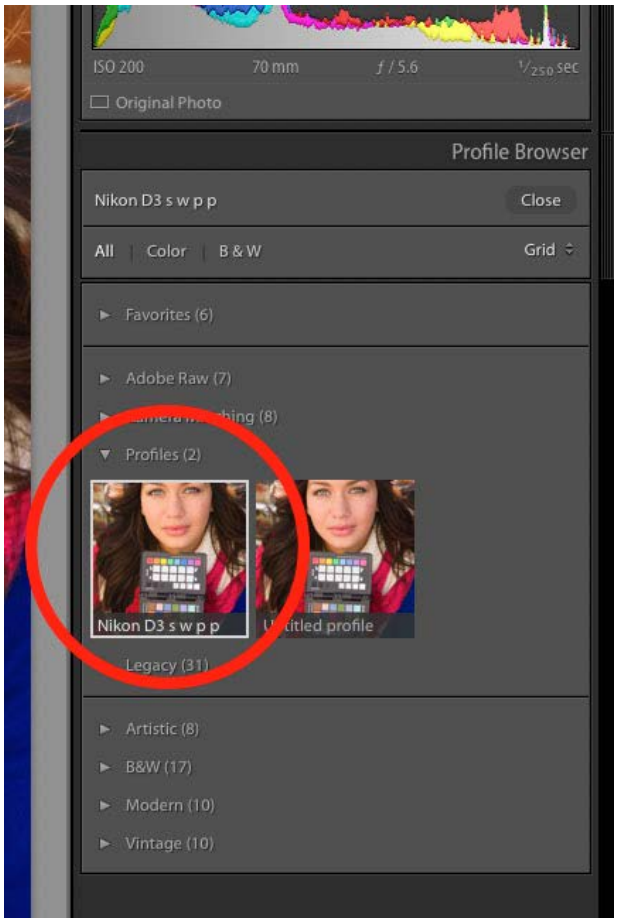


In Lightroom 7.3 Adobe have removed the Camera Calibration section from the 'Basic' settings within the develop module, replacing it with a Profile Browser just above the white balance picker.

After Lightroom has re-started the DNG profile can then be applied to a single or group of images. The easiet way of doing this is to open the 'Develop' module and muli-select the group of images you wish to apply the profile to. Then click the '4 rectangle' icon (see left) in the 'Profile' section of the 'Basic' settings. This opens the Profile Browser.

When the Profile Browser opens click, on the arrow next to Profiles and you will see the profile or profiles you have created with the ColorChecker Passport software.

Double click the desired profile to set it, and the browser will close.



Once selected, click the 'Sync' button at the bottom of the left-hand pane and the DNG profile will be applied to all the selected images.

Applying the profile can easily be combined with setting the white balance (and other adjustments) over multiple images described earlier in the document.

** Please note that the profile and the white balance are treated as separate settings, so applying a profile will not automatically white balance the image. The white balance still has to be set for each image using one of the neutral patches on the reference image. **

As you can see the ColorChecker Passport is easy to use and will assist you in adjusting white balance and creating custom DNG profiles for your cameras. This can save a great deal of time in the initial stages of editing, allowing you to achieve a standard base level for all your images wherever you take them and in whatever conditions they are taken.

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