

Moiré Tools – Quick Guide

Capture One

Version 3.7.2



Contents:

1. Moiré – what is it ?
 1. Color moiré
 2. Pattern moiré
2. 3 ways of dealing with moiré
 1. Take precautions when shooting
 2. New Moiré tool in Capture One
 3. Demoirize Plug-In for Photoshop
3. New Moiré tool in Capture One
 1. What can you expect from the tool
 2. How does the tool work
 1. Moiré suppression
 2. Auto masks for suppression
 3. Color masks
 3. Using the tool step by step

What is moiré and what causes it

Moiré is a phenomenon that occurs when one repetitive pattern meets another repetitive pattern of approximately same pattern size.

In digital photography moiré can occur when photographing repetitive patterns which when focused on the sensor have approximately the same pattern size as the sensor pixels.



Different types of Moiré

Color moiré:

Color moiré is a kind of moiré where all the fine details in the images is still rendered perfect but the color information is more or less off



Color moiré in fabrics



Color moiré in skin tone highlights

Pattern moiré

With pattern moiré the details in the image is also affected. Pattern moiré often comes together with color moiré.



Pattern moiré and light color moiré

With a Phase One camera back there are 3 different ways to handle moiré

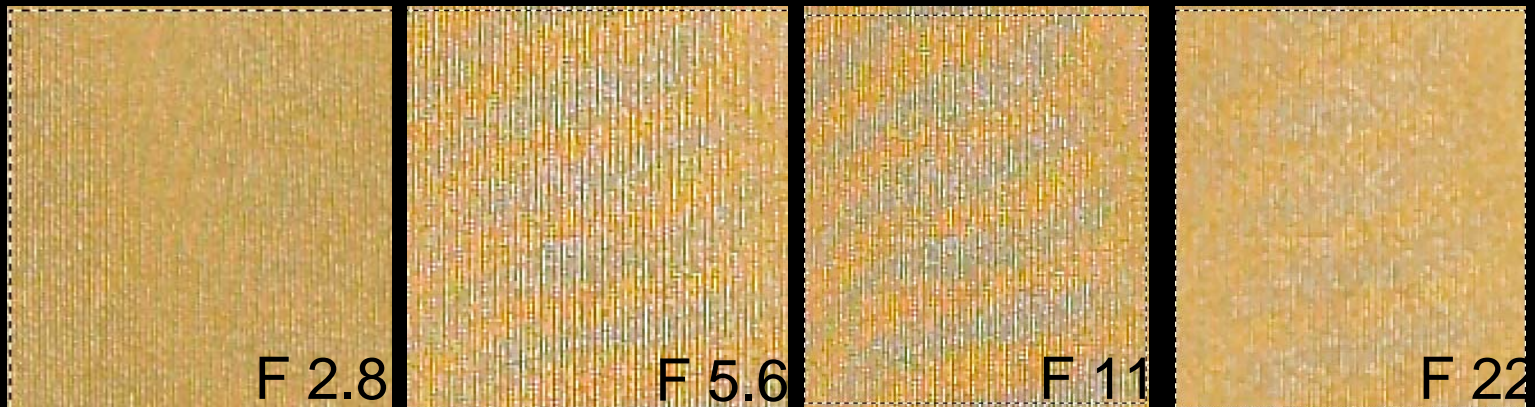
1. Avoid the moiré during shooting
2. Moiré tool located in the Capture One software
3. Phase One Moiré plug-in in Photoshop

How to avoid moiré when capturing

3.1 Try to avoid moiré when shooting

Lens aperture:

What aperture you use plays a large roll if moiré appears or even how much it appears. The examples below are 4 different shots of a piece of fabric perfectly focused but shot at different aperture.



The images shot at F 2.8 and F 22 hardly show any moiré. The images shot at F5.6 to F11 show maximum moiré because the lens is much sharper in this aperture range. This test was done with a H1 80mm lens which is a very sharp lens but other lenses will show same behavior. If moiré is a problem then if possible avoid the aperture range where the lens is most sharp.

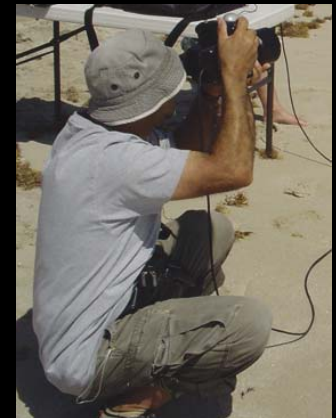
3 ways of dealing with moiré

Angle and distance to the object

If you realize that you got moiré in your picture change the camera position or angle slightly. Just a few centimeters can have a dramatic effect. To help avoid moiré you can create and maintain a list where you note for some typical fabrics at what distance from the camera they introduce moiré using a specific lens. Next time you shoot a similar fabric you may be able to use your list and choose a distance that avoids moiré.

Hand hold the camera when using daylight or other constant light:

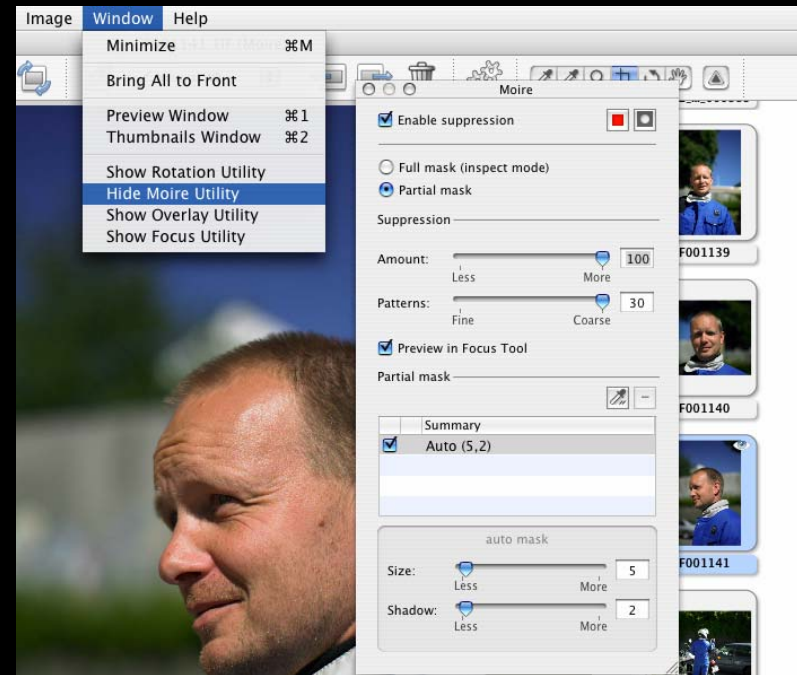
Try hand holding the camera. The small vibrations in a camera body can eliminate moiré without compression sharpness. (With the new Hasselblad H1 camera handholding does not have the same effect than on other cameras as the shutter system is very well balanced and allows you to make sharp handhold images at even quite long exposure times like down to approx. 1/20 sec.)



A new moiré tool is now integrated into Capture One.

Main benefits of the new tool:

- Removes color moiré directly when processing the raw image
- Moiré removal settings can be applied to other raw files
- Auto masking insures that the moiré tool only works in areas with high risk of having moiré
- Moiré mask can be visualized and adjusted
- The effect of moiré tool can be inspected in the Focus tool



What can you expect from the new moiré tool?

Remove color moiré:

With the new moiré tool you can remove color moiré. The 2 images below show an example of how the Moiré Tool can fix color moiré 100%. The method used to remove moiré is a complex method based on statistical pixel information and is by far more complex than a simple color blur in a Lab like color space.



Processed without Moiré Tool



Processed with Moiré Tool

What can you expect from the new moiré tool?

Pattern moiré can not be removed:

Many times color moiré also comes together with pattern moiré. When that is the case the Moiré Tool will only be able to remove the false moiré color bands but the pattern moiré will still be there. The two images below shows an example of an image with both color and pattern moiré. In this example the pattern moiré is still visible after use of the tool.



Processed without Moiré Tool



Processed with Moiré Tool – Pattern moiré can not be removed

What can you expect from the new moiré tool?

The challenge of the tool:

The tool removes moiré by a method patented by Phase One. The method is quite robust in terms of removing moiré without blending different scene colors that is not moiré. But even though that it is robust when applied to a whole image the moiré removing method may damage part of the image by blending colors that should have stayed intact.

In order to minimize any risk of blending scene colors the moiré tool uses auto masks and user defined color masks to guide where the moiré removing method should be applied to the image.

When using the tool you may sometimes find that it is not possible to make the tool remove the moiré in the image without damaging other parts of the image. In these cases you should use the Demoirize plug-in for Photoshop or other methods.

What can you expect from the new moiré tool?

The Moiré tool only works with raw files from the newest Phase One digital backs:

Phase One H 25/ H 20/ P 25/ P 20

The Moiré Tool is currently limited to the Mac PRO and DB versions of Capture One

How does the tool work ?

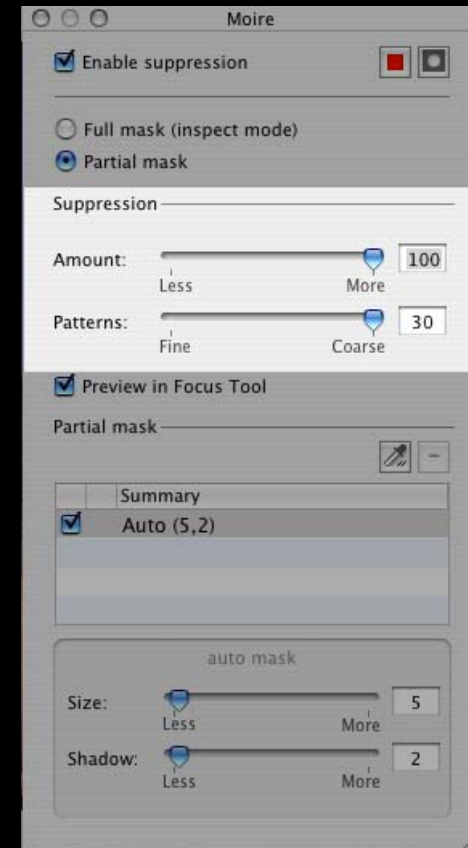
The moiré suppression

The moiré suppression can be controlled by 2 parameters, the amount and the pattern size slider.

With the Amount slider you define for the suppression method how strong the moiré colors are.

With the patterns size slider you define for the suppression method how wide the colored moiré bands are.

By specifying the right “Amount” and “Pattern size “ the suppression method will be able to remove the moiré with a minimum of errors where it may remove meaningful color information from the image.



How does the tool work ?

Using the Amount slider:

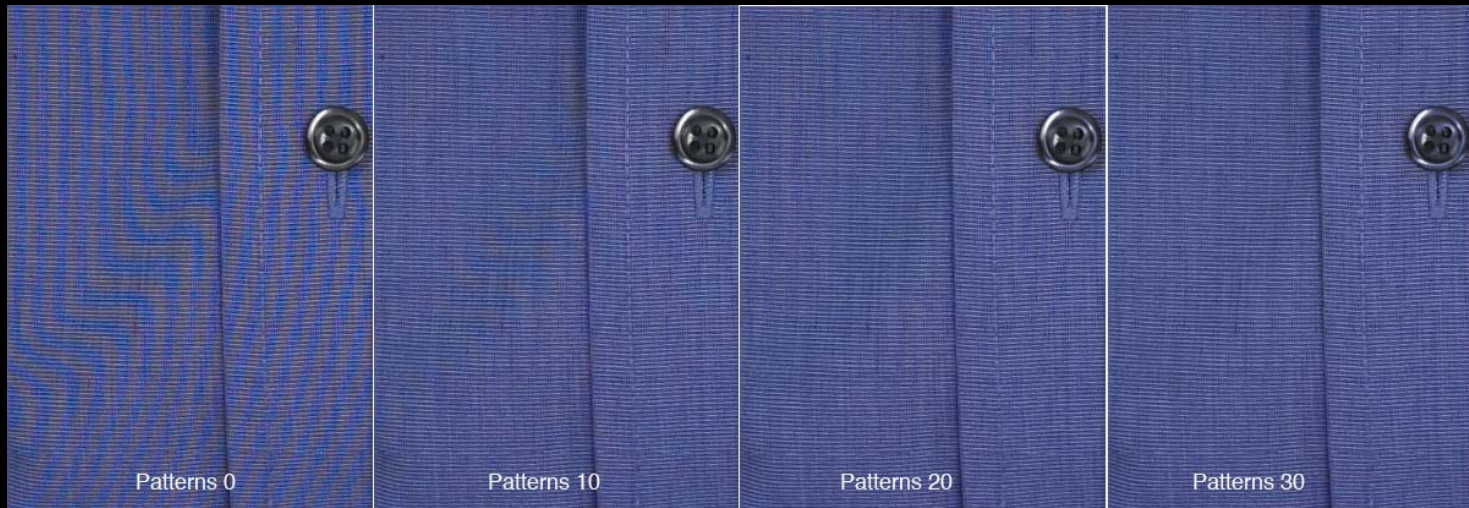
In the example below you see the effect of using different Amount slider values . At 0 all the color moiré is seen. At 10 you can still see all the color bands but the colors are less visible. At 50 all the moiré color bands has disappeared.



How does the tool work ?

Using the Pattern size slider:

In the example below you see the effect of using different pattern size. Amount is set to 50 to insure that the all the moiré can be remove. Now when sweeping the pattern size slider from 0 to 30 you will see how the moiré color bands gradually gets removed starting with the most narrow color bands. At pattern size 10 you see that most of the thinnest color bands has disappeared but the wider are still visible.



How does the tool work ?

Auto mask

Auto masks are used in order to limit the moiré suppression method to only work on area of the image where it is likely that there is moiré. (Areas where image details or repetitive patterns are of approximately same size and frequency as the pixels in the image sensor).

When using auto masks an complex analysis of the image takes place and a mask is generated. The mask can be displayed in the focus window.

The screenshot shows the Moiré tool interface with several annotations:

- Icon for choosing the mask color:** Points to the red and grey color selection icons at the top right.
- Show mask in preview window icon:** Points to the camera icon at the top right.
- Auto mask only works when the Partial mask mode is selected:** Points to the 'Partial mask' radio button.
- Auto mask is automatically selected when selecting Partial mask:** Points to the 'Auto (5,2)' option in the 'Summary' table.

The interface includes the following controls:

- Enable suppression
- Full mask (inspect mode)
- Partial mask
- Suppression section:
 - Amount: slider from Less to More, value 100
 - Patterns: slider from Fine to Coarse, value 30
- Preview in Focus Tool
- Partial mask section:
 - Summary table:

	Summary
<input checked="" type="checkbox"/>	Auto (5,2)
<input type="checkbox"/>	
<input type="checkbox"/>	
 - auto mask section:
 - Size: slider from Less to More, value 5
 - Shadow: slider from Less to More, value 2

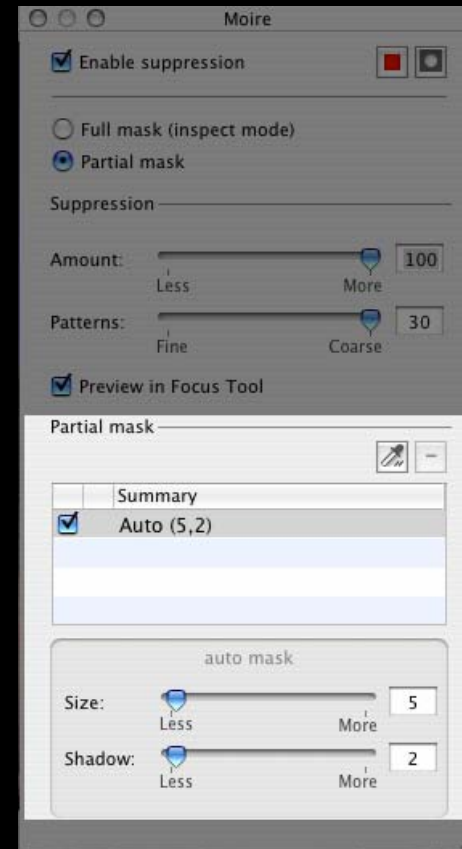
How does the tool work ?

Adjusting Auto mask

The Auto mask may not fit exactly on the moiré infected part of the image. The mask can therefore be adjusted by 2 sliders, Size and Shadow.

Using the size slider the mask will grow or shrink around the areas with high image details and repetitive patterns

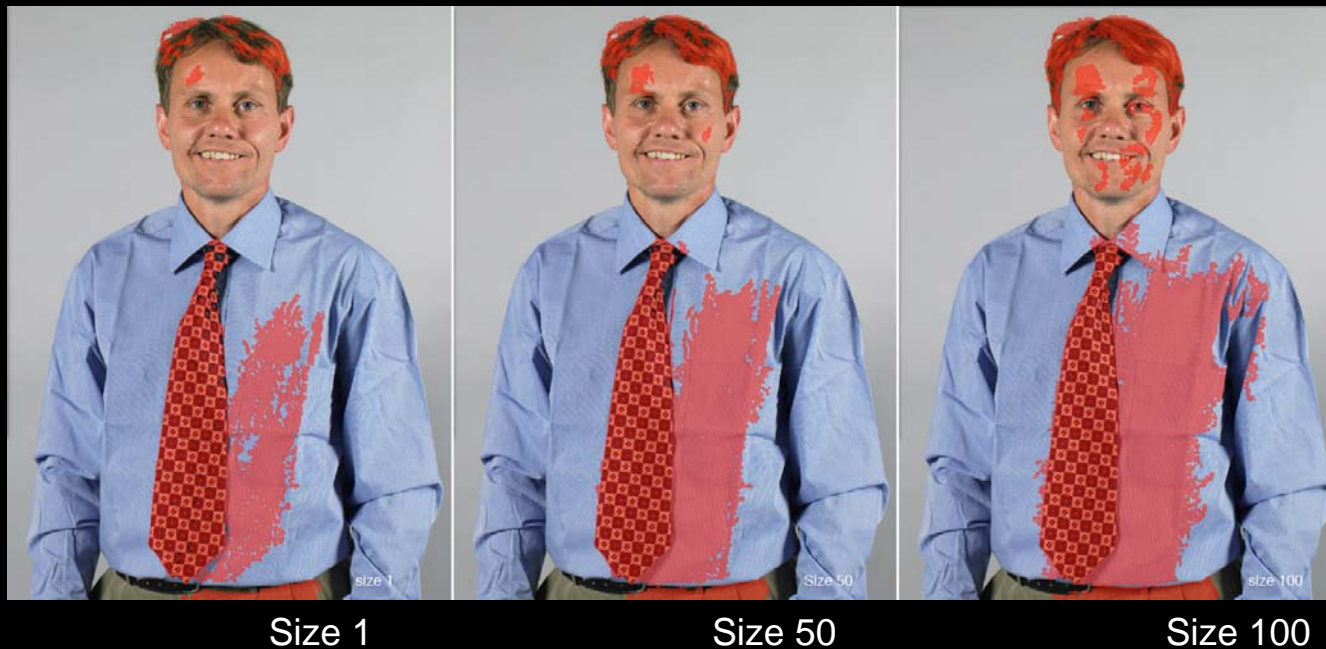
The shadow slider gives you the ability to bring more or less shadow areas into the mask



How does the tool work ?

Adjusting the auto mask by the size slider:

In the example below you see the effect of using different values of size. As it can be seen the mask grows with increased values of Size. For the last image the eye has also been included into the mask. This is typically not wanted as the suppression tool often damage the white part of an eye if it is included in a mask.



How does the tool work ?

Adjusting the auto mask by the Shadow slider:

In the example below you see the effect of using different values of the Shadow slider. Look especially in the pants. At Shadow =1 the mask has not included any part of the pants while at Shadow = 40 a portion of the pant has been included



Shadow 1

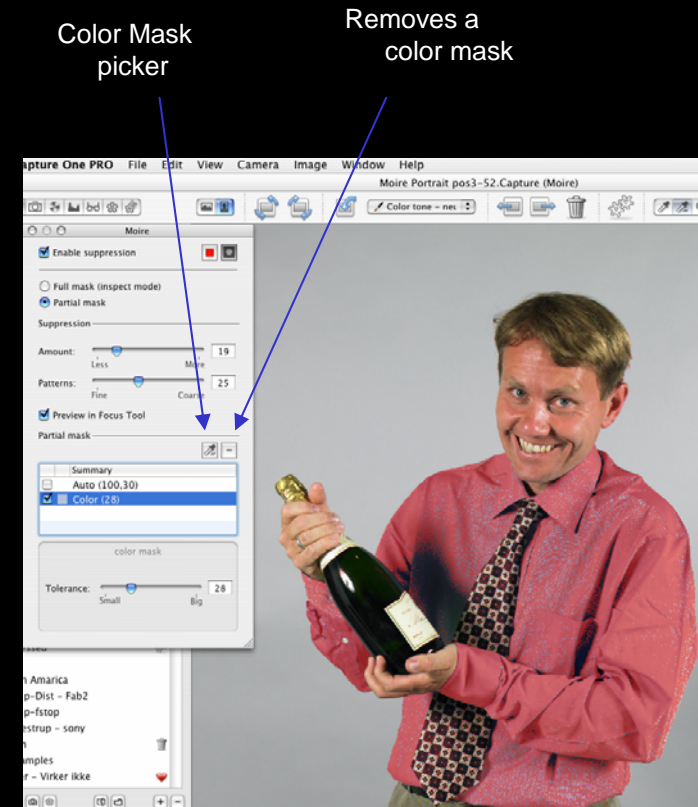
Shadow 20

Shadow 40

How does the tool work ?

Using Color masks:

Some time it is not possible to adjust the auto mask to cover only the moiré infected part of an image. In such a case it may be a possibility to do a color mask selection. By selecting the color mask picker you can simply pick the color of for instance a textile that is moiré infected and a color mask is generated.



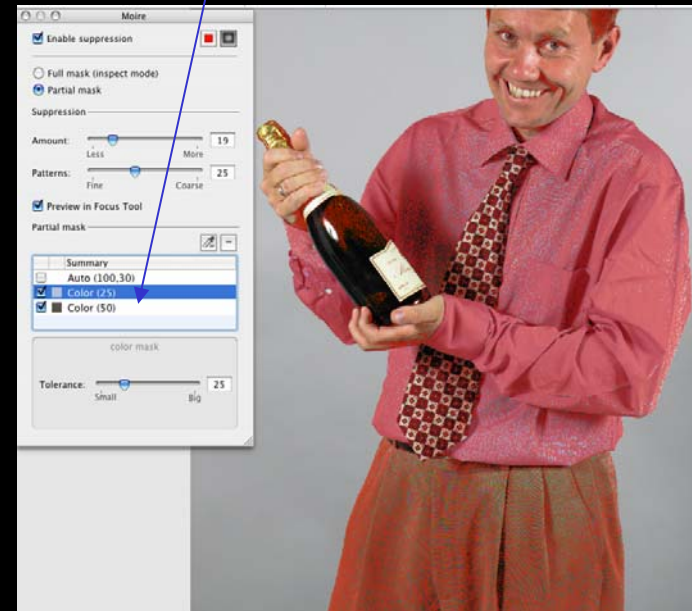
A color mask has been made by picking the color of the shirt

How does the tool work ?

Multiple Color masks:

It is possible to make multiple color masks. Simply pick another color by the color mask picker and a new mask is added to the mask list. Each mask will be treated as a separate mask and there will be no color bleeding from colors in one mask to colors in another mask.

Mask list now show 2 color masks and an unselected auto mask

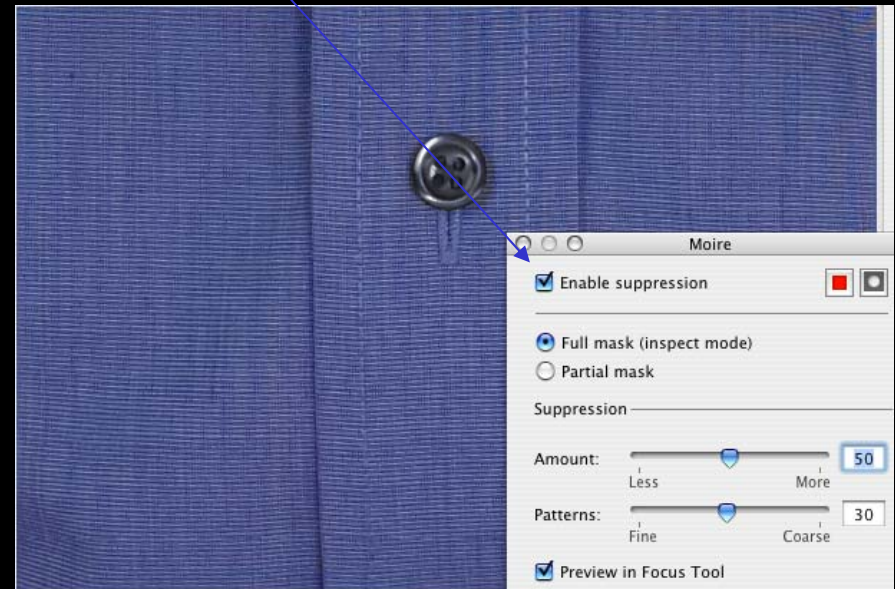


A second color mask has been made by picking on the pants

Steps for how to use the tool:

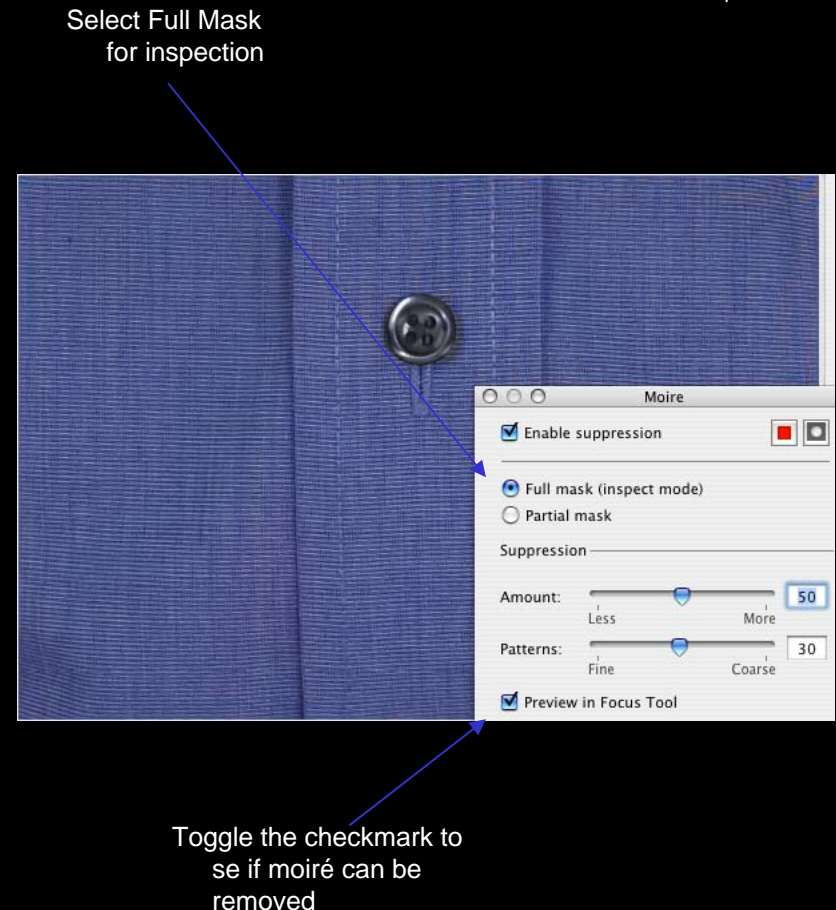
1. Look in Preview window to identify possible moiré areas
2. Use the Focus tool to see if moiré shows in the processed file
3. If moiré is found open and enable the Moiré tool

Enable the Moiré tool



Steps for how to use the tool:

4. Check if the moiré found in the image can be removed by the tool. Select Full Mask (Inspection Mode) When this mode is selected the tool removes moiré over the entire image but may also damage other part of the image but at this step we are only interested in seeing whether the moiré can be removed or not. Use the Focus tool to inspect that the moiré can be removed. Use the checkbox “preview in Focus Tool” to turn on or off the effect of the moiré suppression.



Steps for how to use the tool:

5. Use the size and shadow slider to adjust the auto mask to cover only areas with possible moiré. The moiré mask is displayed in the preview window as a red layer. The mask color can be customized.
6. Adjust the amount and pattern size sliders to the lowest position that still removes the moiré
7. Optionally add a color mask if the auto mask can not be adjusted to cover only areas with possible moiré
8. If it turns out that it is too difficult to make a good mask selection it can be an option to make two processed versions of the image. One without the moiré tool and one with the full mask enabled. In Photoshop blend the two images manually. Put for instance the moiré fixed version on top of the other version and erase only the part of the moiré fixed layer where the image has been damaged.

3. The Phase One Moiré plug-in in Photoshop

As an alternative solution to removing moiré in Capture One you can use the Phase One demoirize tool. When using this tool make a manual selection of an area that needs to be moiré fixed. Remember to use feather of about 5-8 pixels as this insures that fixed areas blends smoothly into non fixed areas of the image.



3. The Phase One Moiré plug-in in Photoshop

The tool gives you 3 options:

Advanced: This filter deals with many different type of moiré and is relatively robust in terms of not mixing different colors. Use the Pattern size slider to insure that the moiré color bands can be removed. Tip: For the Quality /Speed you will often get better quality when using a setting in the middle or even at the Speed end of the slider. Check the result by viewing the image in 100% rather than in “Scale to fit”.

Unicolor textiles: This filter deals with heavy moiré in unicolored textiles.

Skin and Hair: This filter is optimized for the relatively small randomly seen moiré that can occur in skin and hair areas.

