9 Mosaicing Tools

The Mosaic tool box tools will help you create mosaics, making all images look alike by changing the color tables and by cutting the overlapping sections and applying the feathering tool to hide the seam of the cut.

Mosaic Tool Box

The Mosaic tool box is used to balance the tone between all images of a mosaic and to automatically or semi-automatically create a mosaic by cutting the overlapping sections and applying the feathering tool to hide the seam of the cut.

The Mosaic tool box contains two tools, *Balance Tone* and *Define Seam*.

Balance Tone Tool

Use the *Balance Tone* tool when you want to balance the tone of colors between all of the images of a mosaic.

Upon selecting the *Balance Tone* tool, the tool settings window displays two option lists, Mode and Source Area:

- Mode

  Mode represents the method to be used for tone balancing. Modes are listed below.

  - Average

  Averages the tone by using all selected images and averaging a unique color table that is applied to all the selected images.

  - From Reference

  Utilizes a source image color table to balance the selected images.

- Source Area

  Source Area represents the area of the selected images to which tone balance will be applied. Possible areas are listed below.

  - Entire Image(s)
  - Overlap(s)
  - Block
  - Oriented Block
  - Element
  - Fence

  All of the above options are fully described in detail below.
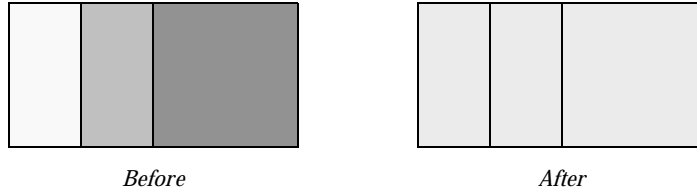
Balance Tool Options - Average Mode

All selected images are altered based on the tone average and standard deviation from the image selection set. The Average method is useful when all images look good but are not perfectly balanced.

✍ When Average is selected, only Entire Images and Overlaps are available from the Source Area option list. The other areas, Block, Oriented Block, Element and Fence are not available.

Average is the default option.

Example of the Average method with the area set to Entire Images

Before   *After*

Balance Tool Options - From Reference Mode

From Reference should be used when one image of the mosaic, or an area of the image, looks particularly good and all other images of the mosaic should look similar. *Tone Balance* is performed for each selected image, except the reference image, to match the Reference Area. The Reference Area is selected by using one of the available options under the Source Area option list.

Example of the From Reference method with the area set to Entire Images

Before   *After*
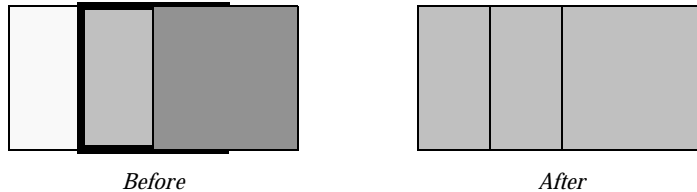
Balance Tool Options - Source Area

Entire Image(s)

- Average mode:

  All pixels of all selected images are used for the *Balance Tone* computation.

- From Reference mode:

  The complete reference image will be used. The Histogram of the Reference image is applied to the selected images.

Overlap(s)

- Average mode:

  Only the overlapping pixels of all the selected images are used for the *Balance Tone* computation.

- From Reference mode:

  Pixels of the overlapping portion of the reference are used to compute the new histogram that is applied to all selected images.

Block (Available with From Reference only)

In the Block source area, the area is chosen by entering a block shape selection on the Reference Image. This technique allows you to sample pixels of a specific area of the reference image.
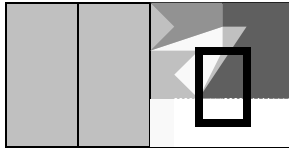
Element (Available with From Reference only)

In the Element source area, the area is chosen by selecting a closed design file element. This technique allows you to only sample pixels of a specific area of the reference image using a non-reticular shape. The pixels comprised inside the element are used to compute the new histogram that will be applied the all selected images.

Fence (Available with From Reference only)

In the Fence source area, the active fence is used to select the pixels that are used to compute the new histogram that is applied to the selected images.

➤ **To Tone Balance with Average Mode**

1. From the Tools menu, select Image > Mosaic.

   The Mosaic tool box opens.

2. Select the *Tone Balance* tool.

3. In the tools settings window, set:

   Mode: Average

   Source Area: Entire Image

4. Select the first image by pointing at the image and entering a data point.

   A blue outline surrounds the image.

5. Repeat step 4 for remaining images to be balanced.

6. Reset to accept the image selection set.

7. Enter a data point to process the image selection set.

   The images from the selection set are now balanced.

➤ **To Tone Balance with From Reference Mode**

1. From the Tools menu, select Image > Mosaic.

   The Mosaic tool box opens.

2. Select the *Tone Balance* tool.

3. In the tools settings window, set:

   Mode: From Reference

   Source Area: Entire Image

4. Select the first image by pointing at the image and enter a data point.

   A blue outline surrounds the image.

5. Repeat step 4 for all the other images to be balanced.

   DO NOT select the image that is used as the reference.

6. Reset to accept the image selection set.

7. Select the reference image by pointing at the reference image and enter a data point.

   A dotted light blue outline surrounds the reference image.

8. Enter a data point to process the image selection set.

   The images from the selection set are now balanced using the reference image.

✎ The reference image is not modified.

Define Seam Tool

Use the *Define Seam* tool to define the position of the seam between two overlapping image portions of a mosaic and to remove the portion defined by the seam from the top image. *Define Seam* may also apply the *Feathering* tool to the seam. All options are available through the tools settings window.

Seam Tool Options > Seam Type

A seam is defined as a segment between the two intersection points of the overlapping area.

Top Image
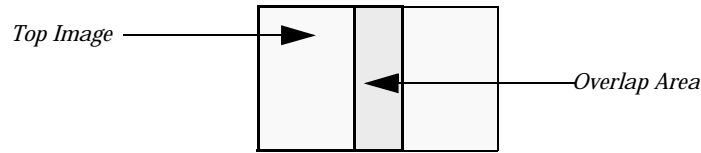
Overlap Area

Example of an Overlap Area

•   Quick

Used to quickly mosaic two images. The seam is automatically defined by the tool. If feathering is ON, you have control over the width of the feathering.

White = Portion that is deleted

= Top Image

= Bottom Image
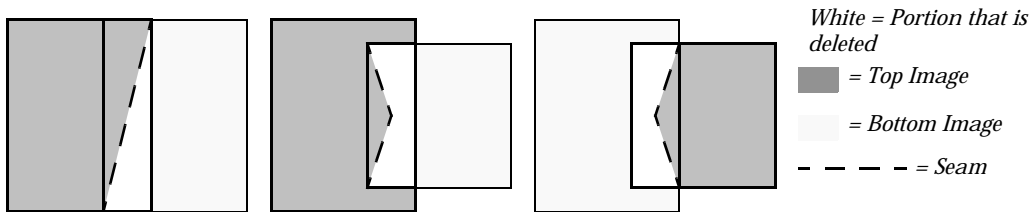
– – – = Seam

Automatic Seam Definition

☞ As shown in the above diagram, the top image is always the one that is cut by the tool.

•   User-Defined

In this mode, the seam is attached to the pointer and you have control over the placement of the seam. You can enter as many points as required to position the seam. Once in place, a reset confirms the placement of the seam.

The area that will be removed is processed exactly the same way as the Quick mode (see graphic above).
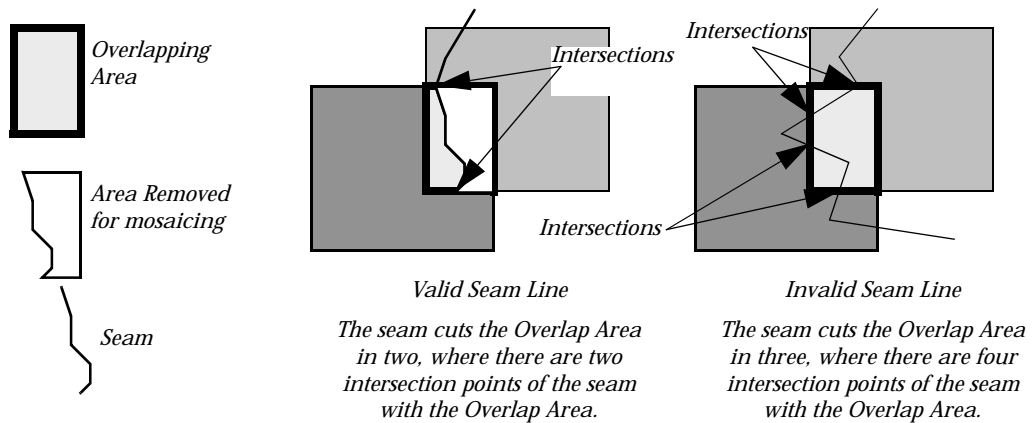
•   Turning ON *Feathering* feathers the seam, equidistant from the center, using the value from the Width field.

•   Turning ON *Save Seam*, after the mosaicing process is executed, converts the seam into a design file element. It is

therefore possible to utilize this seam again (see Element Mode below).

• Element

In this mode, the seam line is defined by selecting a Design File Element.

  • The element must not be closed, such as a Line String, and must have two intersection points with the overlapping area of the two images.

Overlapping Area

Area Removed for mosaicing

Seam

Intersections

Intersections

Intersections

Valid Seam Line

The seam cuts the Overlap Area in two, where there are two intersection points of the seam with the Overlap Area.

Invalid Seam Line

The seam cuts the Overlap Area in three, where there are four intersection points of the seam with the Overlap Area.

If an invalid seam is detected, it will be rejected and a message displays in the status bar.

Tool Options > Feathering

When this option is ON, *Feathering* is enabled. Feathering is a "camouflage" technique that allows the seam "cut-line" to fade into the image.

Before mosaicing

No Feathering Used
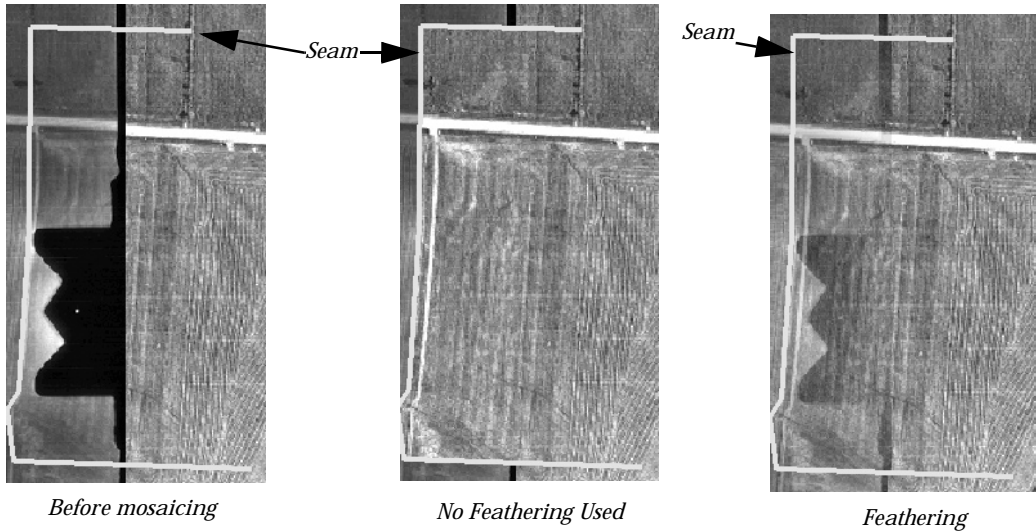
Feathering

Tool Options > Width

Used to specify the width of the feathering. The width is given in working units and is applied equidistantly on both sides of the seam.

Feathering set to 6 WU
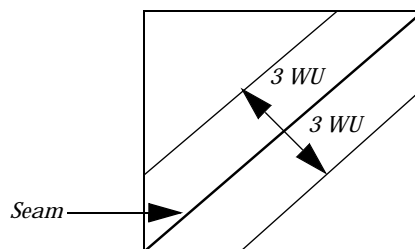
A good value for a seam is determined by the scale factor and the resolution of the image. Generally, the seam will be large enough to hide the cut line on the image created by the seam. Nevertheless, you may consider a narrower feather value if objects, such as buildings, are within the feathering area.

Feathering can also be used to create aesthetic scenes such as embedding a thumbnail.

Example of Aesthetic use of Feathering

➤ **To mosaic two images using Quick Mode**

1. From the Tools menu, select Image > Mosaic.

   The Mosaic tool box opens.

2. Select the *Define Seam* tool.

3. In the tools settings window, set:

   Seam Type: Quick

   Feathering: ON

   Transparent Background Color: 255

4. Select the first image to mosaic by moving the pointer over it and enter a data point.

   A blue outline surrounds the image.

5. Select the second image as in step 4.

   A blue outline surrounds the image. The "Seam" displays with the feathering width highlighted.

   Zoom in as necessary to see the width of the feathering.

6. Adjust the width as necessary by typing a new number in the width field of the tool settings window, then press <Enter> to activate the new width.

   The Seam resizes automatically.

7. When you are satisfied with the results, enter a data point to begin the mosaicing process.

The images now form a seamless mosaic.