

# Hot-Rodding Brushes in Corel® Painter™



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Aside from simulating an amazingly wide variety of traditional media, Painter's Brush Engine performs another major task: writing pixels to the screen as absolutely fast as possible. Within the Brush Controls palette are a group of controls that can drastically affect a brush's performance. These performance-enhancing controls vary depending on what Dab Type is used by a specific brush variant. Understanding which controls are relevant for a variant provides you with the opportunity to hot-rod it and get more performance out of it. Let's go!

## The Brush Dab Continental Divide

There are currently 24 Dab Types in Painter. These Dabs control the mark that is made by a variant. In fact, you can think of them as personality types for brushes. Some are aggressive; others quiet and reserved. This large cast of characters can ultimately be distilled down into two groups: *Pixel-based* and *Render-based*.

*Pixel-based dabs* are made up of—surprise!—pixels. The *Circular*, *Single-Pixel*, and *Static Bristle Dab Types* construct a pixel-based dab internally; the *Captured Dab Type* enables the artist to create and capture a dab. When painting with pixel-based brushes, the dabs are closely overlapped to produce the illusion of a continuous stroke.

*Render-based dabs* don't rely on closely-spaced dabs to create the illusion of a continuous stroke; they actually are a continuous stroke. The *Camel Hair*, *Flat*, *Palette Knife*, *Bristle Spray*, *Airbrush*, *Pixel Airbrush*, *Line Airbrush*, *Projected*, and *Rendered Dab Types* (and, by extension, the *Liquid Ink* and *Watercolor Dab Types*) all render a cluster of antialiased one-pixel lines as a continuous stroke. These lines conspire together to create the illusion of a complex brushstroke made up of individual brush hairs (the *Rendered Airbrush Dabs* simulate individual droplets of ink/paint/dye).

This fundamental Dab Type division—*Pixel* or *Rendered*—defines the controls that are used to enhance individual brush performance. Painter is smart enough to gray out any controls

that aren't used for a particular Dab Type. With this in mind, you can either look in the Brush Controls *General* palette to determine a variant's Dab Type or go to the *Brush Control* palettes described below and see which controls are active to perform any variant-specific hot-rod.

## Pixel-based Dab Hot-rod Controls

For pixel-based dabs, all of the hot-rod controls are found within the Brush Controls' *Spacing* palette. Because pixel-based brushes rely on closely spaced dabs to create the illusion a continuous stroke, the closer this spacing is, the harder your processor has to work to write them to the screen.

The *Spacing* and *Minimum Spacing* (Min Spacing) sliders control pixel-based dab spacing. The *Spacing* slider controls, as a percentage, the distance between dabs. The *Minimum Spacing* slider controls the minimum distance, in pixels, between dabs. There is no universal formula that can be given for these slider values; each brush must be uniquely adjusted for maximum performance.

As a rule of thumb, if a brush draws sluggishly, the *Spacing* values are likely set too low. Correcting them requires what I refer to as *season-to-taste* adjustment. By this, I mean that you should adjust the *Spacing* sliders slightly upward in value (starting with *Min Spacing*) and test the resulting stroke onscreen until you either get acceptable performance or start seeing the overlapping dabs. If you start to see *tire tracks* (the effect of too-sparsely spaced dabs), carefully adjust the slider down until the brush stroke appearance isn't objectionable. This adjustment process is often a compromise between performance and brush stroke fidelity. Fortunately, on newer processors the compromise is minimal.

Next on the hot-rod list are the *Damping* and *Cubic Interpolation* controls. These sliders don't change the dab spacing; they manipulate the dab path.

*Cubic Interpolation* smooths jagged brush strokes by inserting additional points into dab paths. The test for determining whether or not a brush needs *Cubic Interpolation* applied is to draw a circular stroke with the brush as fast as you possible

can. If the resulting stroke exhibits flat straight-line segments along the curve of the stroke (an artifact known as poker chipping), then you should add *Cubic Interpolation*. Start with a minimum value of 1 and increase as needed to eliminate the poker-chipping artifact.

*Damping* uses mathematical calculations to smooth jagged edges and is used to smooth otherwise jagged brush strokes for brushes using rendered dab types. Higher values make the stroke smoother. *Damping* suspends a stroke in a mathematical spring area by using calculations to even out edges and reduce jaggedness. High values of *Damping* round out corners of a stroke. A value of 50% works best. Higher values might be necessary for jittery input devices such as a mouse.

While both of these controls are available for pixel-based dabs, *Cubic Interpolation* is best for pixel-based dab types, while *Damping* is best for render-based dab types. However, you may find that some mild *Damping* enhances the appearance of a brush's strokes without affecting performance.

### **Render-based Dab Hot-rodding Controls**

*Render-based* dabs share the use of the *Cubic Interpolation* and *Damping* with their pixel-based brethren, so we're already halfway finished describing these controls. The *Feature* (*Size* palette) and *Boost* (*General* palette) sliders round out the render-based dab hot-rodding controls.

*Feature Size* controls the density of hair-simulating lines that make up a render-based dab. This control is so important that it is included on the *Brush Property Bar*. Many times I've seen some Painter users get frustrated when a *Continuous Stroke*-based variant performs sluggishly on their processor. This sluggishness is almost always related to the current setting of *Feature Size*.

As brush hair density (the feature size) increases, greater processor bandwidth is required to render strokes in real time. When a render-based dab brush behaves sluggishly, adjust the *Feature Size* slider upward (to the right) and then test the brush. A bit of experimentation will determine the sweet spot of the brush's optimum performance. Conversely, you can control *Feature Size* to increase (adjust slider to the left) a brush's hair density for a more fully-haired stroke; just keep in mind that you will potentially see a performance decrease in stroke responsiveness.

*Boost* speeds up brushing by doing a certain amount of straightening to the individual lines that make up a stroke. *Randomness* is good for adding an analog quality to a stroke (for example, the spacing between individual hairs from one another), but it does affect performance. Reducing randomness via the *Boost* control improves rendering time, which can translate into a faster brush. Most likely, you won't even need to utilize this control if you have a newer processor. However, if your machine is getting on in years, you may find that the *Boost* slider is your new best friend! My best advice is to try *Boost* out on a sluggish render-based dab brush and see if it improves performance.

### **Faster Is Better**

With these hot-rodding controls at your disposal, you can eke out every drop of performance from your Painter brushes. Most brushes already perform fine, but once in a while, you may discover a favorite brush that appears to be rather pokey. Use Painter's brush hot-rodding tools to turn that pokey brush into a speed demon.

*Viva la Painter!*

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# Hot-Rodding Your Brushes

in Corel® Painter™

*John Denny*

▼ General

Dab Type: Circular  
Stroke Type: Single  
Method: Cover  
Subcategory: Soft Cover  
Source:

Opacity: 10%  
Expression: Pressure  
Direction: 0°

Grain: 20%  
Expression:  
Direction: 0°

Boost: 0%

▼ Size

Size: 106.0  
Min Size: 52%  
Expression: Pressure  
Direction: 0°

Size Step: 5%

Feature: 1.0  
Expression:  
Direction: 0°

▼ Spacing

Spacing: 12%  
Min Spacing: 1.0  
Damping: 50%  
 Continuous Time Deposition

Cubic Interpolation  
Points: 2

Pixel-based Dabs



- Circular
- Single-Pixel
- Static Bristle
- Captured
- Camel Hair
- Flat
- Palette Knife
- Bristle Spray
- Airbrush
- Pixel Airbrush
- Line Airbrush
- Projected
- Rendered
- Liquid Ink Camel Hair
- Liquid Ink Flat
- Liquid Ink Palette Knife
- Liquid Ink Bristle Spray
- Liquid Ink Airbrush
- Watercolor Camel Hair
- Watercolor Flat
- Watercolor Palette Knife
- Watercolor Bristle Spray
- Watercolor Airbrush
- Artists' Oils

Render-based Dabs



▼ General

Dab Type: Camel Hair  
Stroke Type: Single  
Method:  
Subcategory:  
Source:

Opacity: 50%  
Expression: Pressure  
Direction: 0°

Grain: 0%  
Expression:  
Direction: 0°

Boost: 0%

▼ Size

Size: 24.0  
Min Size: 26%  
Expression: Pressure  
Direction: 0°

Size Step: 3%

Feature: 5.4  
Expression: None  
Direction: 0°

▼ Spacing

Spacing: 9%  
Min Spacing: 0.8  
Damping: 45%  
 Continuous Time Deposition

Cubic Interpolation  
Points: 0