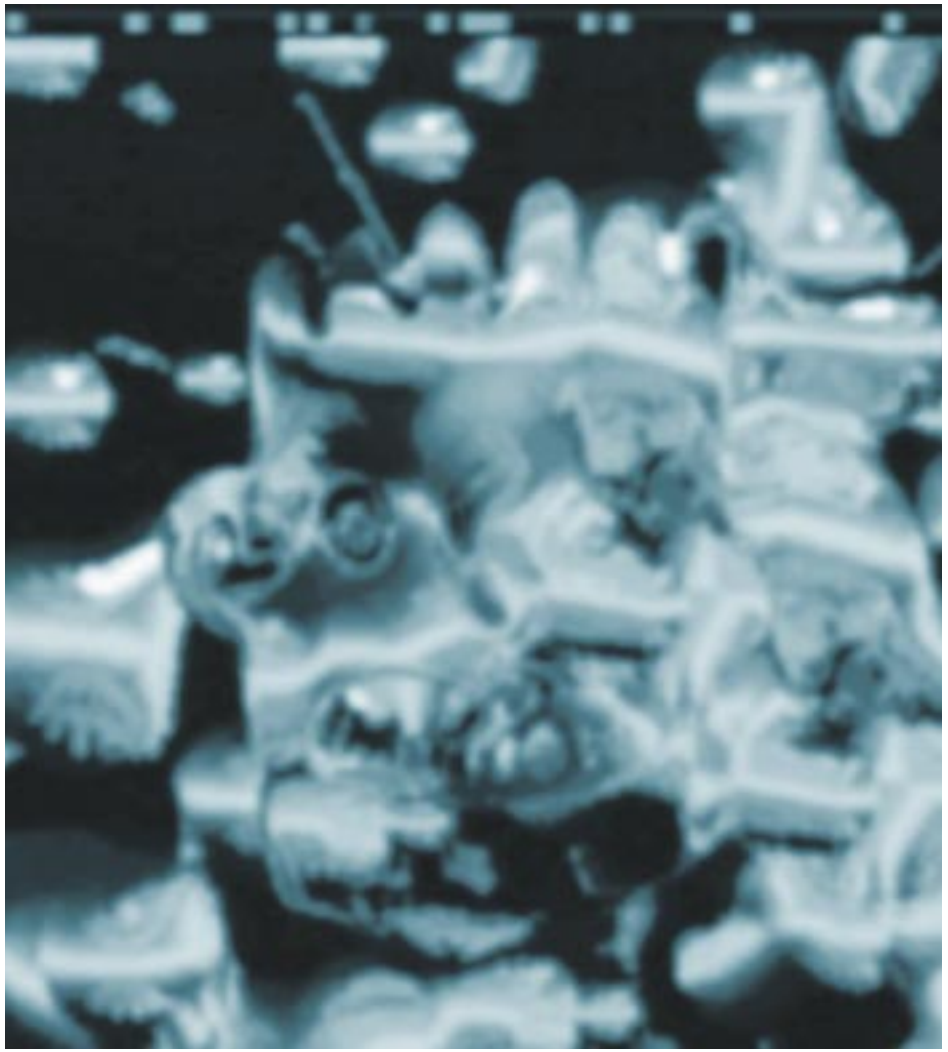


8

Particle Menu

About Particle Effects

Each particle effect is an engine that creates objects, called particles. The particles move and have behavior, like changing color. In some cases, the particles are numerous and flow in a solid mass. Other particles may be few and scattered.

Some particle system need to work for a while, creating particles, before you start to see them. Just move ahead in time and you'll see the effect.

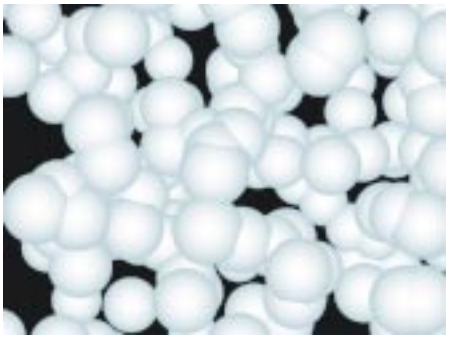
Final Effects Complete has a range of Particle generators. With all the parameters and controls, a myriad of effects are possible.

The Particle menu contains twelve Final Effects Complete plug-ins:

- FE Ball Action
- FE Bubble
- FE Drizzle
- FE Hair
- FE Mr. Mercury
- FE Particle Systems II
- FE Particle World
- FE Pixel Polly
- FE Rain
- FE Snow
- FE Star Burst

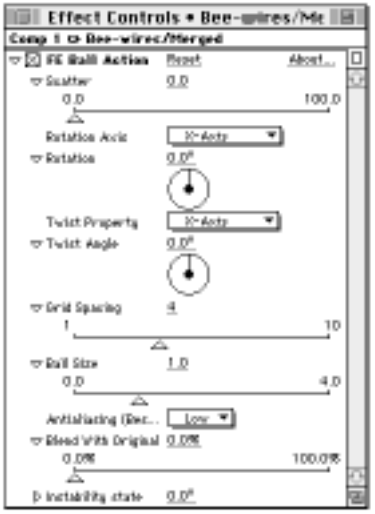
FE Ball Action

Use the Ball Action plug-in to transform an image into balls. You can rotate and twist the balls around a specified axis with the Rotation controls. Only completely opaque pixels are transformed into balls.



A sample of the FE Ball Action plug-in at work.

FE Ball Action Controls



Use the FE Ball Action controls to set the scatter intensity and axis of rotation of the balls.

Scatter

Use the Scatter setting to set the intensity of the scatter effect. The higher the value, the further the balls scatter.

Rotation Axis

Use the Rotation Axis pop-up to select a single rotation axis or axis combination.

X, Y, or Z—The balls rotate around the one axis.

XY, XZ, or YZ—The balls rotate on two different axes.

XYZ Axis—The balls rotate on all three axes.

X15Z Axis—The balls rotate 15 times around the Z axis for every one rotation around the X axis. The effect is a whorl, something like a rotating galaxy. The settings for this are very sensitive.

XY15Z Axis—The balls rotate 15 times around the Z axis for every rotation around both the X and Y axis. The settings for this are also very sensitive.

Rotation

The Rotation control sets the number of times the balls rotate. For example, if you ask for fifteen rotations, the balls will rotate fifteen times over the length of your animation.

Twist Property

Use the Twist Property pop-up to select a Twist Property.

X Axis and Y Axis—Twist in the selected axis

Center-X and Center-Y—These options start the twist effect at the center point of the selected axis.

Radius focuses the greatest twisting effect in the center of the image. The twisting effect diminishes as it moves toward the periphery.

Random creates a chaotic twist effect.

Red, Green, Blue—Twist is based on the intensity of the color you select. The least intense areas receive the most twist.

Brightness—Twist is based on the brightness of the image, with the darkest portion receiving the most twist.

Diamond—The image is twisted into a diamond shape.

Rectangle—The image is twisted into a rectangular shape.

Fast Top twists both the X and Y axis, with the Y axis twisting faster than the X axis.

Twist Angle

Twist Angle sets the direction of twist.

Grid Spacing

Grid Spacing controls the density of the balls. A higher value produces fewer balls.

Ball Size

Ball Size control the size of the ball particles.

Antialiasing

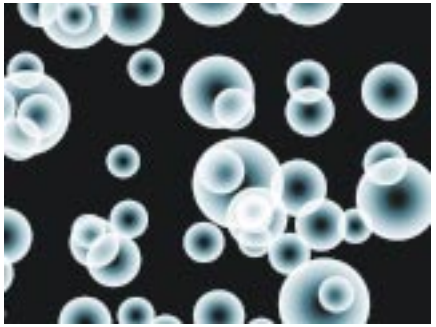
Chose the anti-aliasing level you want from the pop-up. The higher the level of antialiasing, the longer the image will take to render.

Instability State

Instability State controls the individual rotation of each ball, which also is affected by the amount of scatter.

FE Bubbles

FE Bubbles creates a “bubble” effect in the selected layer.



A sample of the FE Bubbles plug-in.

FE Bubble Controls

Use the FE Bubble controls to set bubble speed and amplitude.

Bubble Amount

Bubble Amount sets the number of bubbles. The slider values are between 0-500. The dialog box lets you create up to 5,000 bubbles.

The number of bubbles selected may not corresponded to the number that actually appear in the image.

Bubble Speed

Bubble Speed controls the speed of bubble movement. The Slider allows speed values between 0 and 5. The numerical dialog allows values between -30 and 30. A positive speed value makes the bubbles rise. A negative speed value makes the bubbles fall.

Amplitude

Amplitude controls the side-to-side shimmying motion of the bubbles. The Slider allows Amplitude values between 0 and 3. The numerical dialog allows Amplitude values between 0 and 50.

Frequency

Frequency controls how closely the bubbles clump together. The Slider allows Frequency values between 0 and 3. The numerical dialog allows Frequency values between 0 and 50.

Bubble Size

Use Bubble Size to control the overall size of the bubbles.

Reflection Type

Use this pop-up to select the reflection type you want.

Inverse Reflection gives the bubbles "self-contained" reflections, as if each bubble were reflecting itself.

World Reflection makes the bubbles reflect the source image.

Shading Type

Use the Shading Type pop-up to select a shading style for the bubbles.

Lighten fades the bubble color to white at the bubble's periphery.

Darken fades the bubble color to black at the bubble's periphery.

Fade Inwards makes the centers of the bubbles appear transparent, something like soap bubbles.

Fade Outwards makes the peripheries of the bubbles appear transparent.

For a smoky effect, try using Fade Outward with a very high number of bubbles.

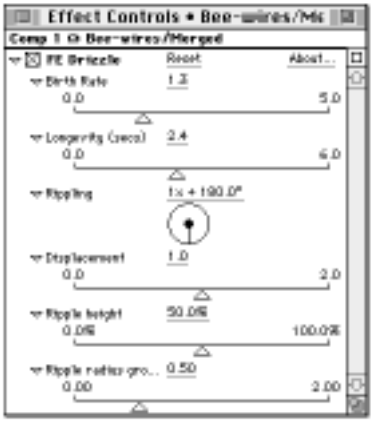
FE Drizzle

FE Drizzle creates circular distortions that look like raindrops disturbing the reflection in a pond. FE Drizzle is a particle generator. The ringlets appear and spread over time.

FE Drizzle creates waves in an image.

You can use FE Drizzle in conjunction with FE Advanced 3d to set the view of the drizzle surface at an angle.

FE Drizzle Controls



Use the FE Drizzle controls to set the number and speed of the ripples.

Birth Rate

Birth Rate controls how quickly ripples are created. With a low setting, ripples are few and far between. Increase the Birth Rate to get more rain.

Longevity

Longevity sets the ripple duration. From its birth, the ripple expands to its full radius over the course of the Longevity setting.

Rippling

Rippling controls the number of rings in each ripple. Drag the radial around to change the setting. Each time around the dial adds another ring.

Displacement

Displacement controls how much the ripples distort imagery in the layer.

Ripple Height

Ripple Height controls the appearance of height in the ripple.

Ripple Radius Growth

Ripple Radius Growth sets the size the ripple expands to.

FE Hair

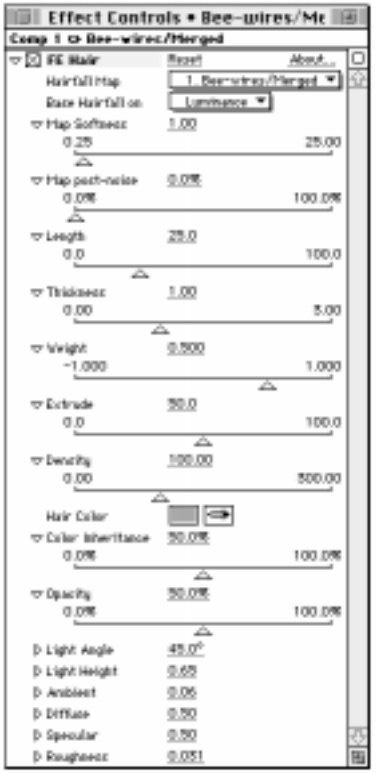
FE Hair creates particles that stretch into filaments, like hair. You can grow hair of any color on anyone—or anything.

FE Hair uses the Alpha channel to determine where hair should grow. With no mask, hair grows everywhere. Before using FE Hair, you should mask the layer to describe the region that generates hair. This "hair layer" will be above the layer containing the creature wearing the hair.

Mask the layer to shape the hair source.

The result of applying FE Hair.

FE Hair Controls



Use the FE Hair controls to set the length, direction and density of hair.

Hairfall Map

The Hairfall Map pop-up lets you choose a layer to control how the hair falls. You can use a map to get some hair to droop and other hair to stand up more. The Hairfall Map modulates the Gravity setting.

Base Hairfall On

The Base Hairfall On pop-up lets you choose which data (from the selected map) controls the hairfall—Alpha, Red, Green, Blue, Lightness or Luminance.

Map Softness

Map Softness lets you control the softness of the hair fall map. Increasing softness makes the hair fall more uniformly.

Map Post-Noise

This feature applies noise to the hair fall map (after Map Softness) to add randomness to the hair fall map.

Hair Color

Hair Color lets you choose a color for the hair.

Note: To get variety in the hair color, see Color Inheritance, below.

Length

Length controls how long the hair grows—from crewcut to Cousin It.

Thickness

Thickness sets the diameter of the individual hairs.

Weight

Weight controls the hair's tendency to droop. You can animate this control to add "bounce" to the hair.

Extrude

Extrude controls the simulated z-depth of the hair fall map. Increasing the extrude value increases the simulation of depth.

Density

Density controls how many hairs there are. Low density creates few hairs. High density creates many.

Opacity

Opacity controls the visibility of the hair pixels. Reducing opacity allows the background to show through.

Color Inheritance

Essentially, the layer pixel where a hair starts to grow determines its color. When Color Inheritance is 100%, color comes entirely from the layer pixels. Lower settings mix the Hair Color with the inherited color.

Light Angle

Light Angle controls the light's lateral position (rotation on Y axis). The appearance of the hair changes as the light moves.

The five lighting controls work together with the Roughness setting to create the sense of depth and texture in the hair.

Light Height

Light Height controls the light's vertical position (rotation on X axis). Typically, you'll set the light angle to match the lighting in the other layers of your composition.

Ambient

Ambient controls the amount of ambient light on the hair. Reduce Ambient light when you want the depth/texture effect to be stronger.

Diffuse

Diffuse controls the amount of directional light on the hair, which increases the hair's 3D appearance.

Specular

Specular controls the highlight in the hair. Increasing the Specular setting creates a bright, shiny hairs, where the light reflects directly.

Roughness

Roughness controls the spread of the specular highlight. Low Roughness produces a smaller, brighter highlight.

FE Mr. Mercury

FE Mr. Mercury is a particle system that creates ever-changing blobs, rather than stable shapes. FE Mr. Mercury's numerous controls, especially the Influence Map and Particle Animation option, can be combined to create an almost infinite number of different animations. FE Mr. Mercury is especially adept at creating convincing mercurial effects for cascading water, molten metal, dissolving plastic, etc.

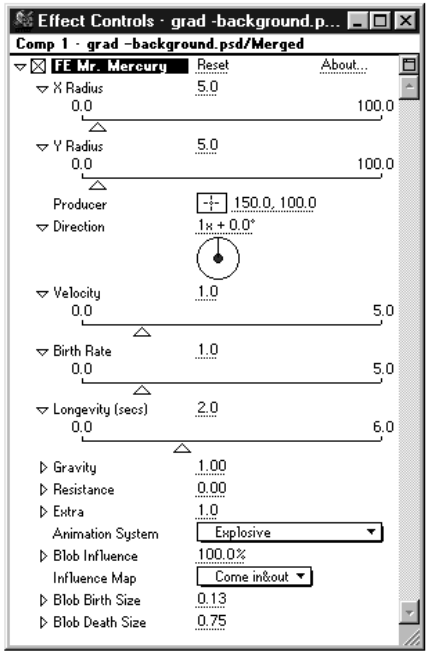
The blobs that are created by FE Mr. Mercury behave realistically, splitting up and rejoining just like real-world liquid particles. The source image is used as a reflection map for the particles.

An example of the FE Mr.Mercury effect.

Almost all controls can be animated dynamically. Longevity is the sole parameter that really should remain static. FE Mr. Mercury fully supports time remapping.

As with all particle systems, you may need to move ahead a little bit in the timeline before you really see the blobs.

FE Mr. Mercury Controls



Use the FE Mercury controls to set the properties of the blobs created by the effect.

X Radius and Y Radius

The X Radius and Y Radius controls set the size of the producer in these dimensions.

Producer

The Producer reference point identifies the position of the blob producer.

Direction

Direction determines the direction of blob flow.

Velocity

Velocity describes the initial speed of the blobs as they are ejected from the producer. Once ejected, the speed and direction of the blobs is determined largely by gravity and other "natural" forces.

Birth Rate

Birth Rate controls the number of blobs born at any given point in time.

Longevity

Longevity sets the life span of the blobs.

Resistance

Resistance applies constant friction, which slows particle movement.

Gravity

Gravity controls the strength of the gravitational force. Positive gravity draws the blobs down, while negative gravity lets them float up.

Extra

This control is used to set an "extra" factor whose effect varies depending on the particle animation being used.

Animation System

Use this pop-up menu to select which animation type you want. The animation type determines the movement behavior of the blobs after birth.

Explosive makes the blobs spread evenly in all directions.

Fractal Explosive makes the blobs spread in all directions, with the speed determined by a fractal model. Useful for creating any effect where a ragged, uneven look is desirable (i.e., a convincing, real-world explosion).

Twirl creates a whirlpool-like, single-direction, rotating twirl, with the blobs spreading evenly with the initial rotation. The Extra control determines the rotation deceleration.

Twirly creates a bi-directional, rotating twirl. Blobs spread evenly with initial rotation.

Vortex creates an upward rotation with accelerating width and decelerating rotation speed.

Fire creates a fairly realistic fire model wherein the blobs oscillate while rising.

Direction makes the blobs spread evenly in the direction set using the Direction control.

Direction Normalized—This option is like **Direction**, except that all blobs move at the same speed.

Bi-Directional makes the blobs spread evenly in both the direction set using the Direction control and in the exact opposite direction. The Extra control determines the angle of the "blob nozzle" from which the blobs emanate. 0.0 is the equivalent of a 0° opening and 1.0 is the equivalent of a 360° opening.

Bi-Directional Normalized—This option is like Bi-Directional, except that all blobs move at the same speed.

Jet creates blobs that inherit the producer's movement. The **Extra** control adds random motion to the blobs.

Jet Sideways creates blobs that inherit the producer's velocity, but channels it into sideways motion. The Extra control adds random motion to the blobs.

Blob Influence

Blob Influence is the "attraction" force generated by the blobs. This determines the amount and speed at which matter from smaller blobs moves into the larger blobs.

Influence Map

Use this pop-up menu to select the behavior of the blobs as they appear and disappear.

Go out. Blobs shrink smoothly into nothing at the moment of death.

Come in. Blobs grow smoothly out of nothing at birth.

Come in & out. Blobs grow smoothly out of nothing at birth and shrink smoothly into nothing at death.

Go out sharp. Blobs maintain a fairly consistent size during life, but shrink sharply into nothing at death.

Constant. Blobs maintain a fairly constant size throughout their lives.

Blob Birth Size

Blob Birth Size sets the ending size of the blobs.

Blob Death Size

Blob Death Size sets the ending size of the blobs.

FE Particle Systems II

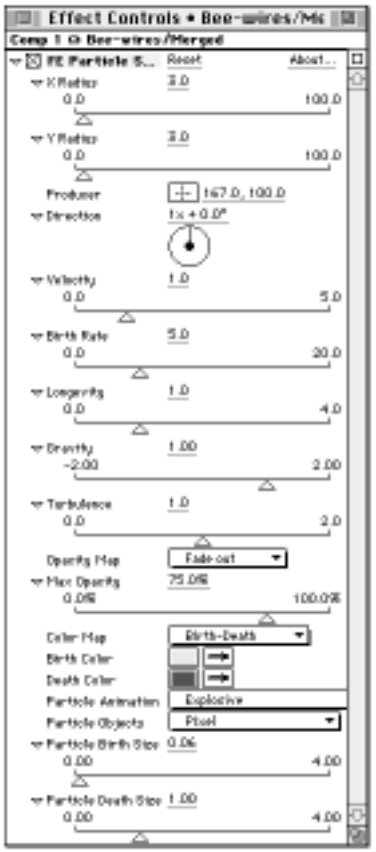
Particle Systems II allows you to independently control features such as Opacity Mapping, Color Mapping, Particle Animation and Particle Objects to create an almost infinite variety of animation effects. These animations might range from simple explosions to massive smoke screens. You can also twirl polygons in different directions, or create oscillating convex lenses.

Particle Systems II is especially useful when you want to animate the position and size of the particle generator. This plug-in can use the source layer as texture, or use the colors from the source layer as birth and death colors for the particles.

Almost all controls can be dynamically animated. Longevity is the single control that should be left static, it controls the life length of all particles. This plug-in supports Time-remapping.

If you are new to Particle Systems, you might want to try working with FE Particle Systems and FE Particle Systems LE first in order to get some practice.

FE Particle Systems II Controls



Use the FE Particle System II controls to set the scatter radius, direction and behavior of the particles.

X Radius

X-Radius controls the horizontal size of the Producer.

If the X Radius has twice the value of the Y Radius, the result is an oblong area whose width is twice that of its height. The Slider values are between 0 and 100. The dialog box values are between 0 and 1024.

Y Radius

Y-Radius controls the vertical size of the Producer.

If the Y Radius has twice the value of the X Radius, the result is an oblong area whose height is twice that of its width. The Slider values are between 0 and 100. The dialog box values are between 0 and 1024.

Producer

The Producer is the origin point from which the particle effect emanates. The Producer can be set to move in any direction you choose.

Velocity

Velocity sets the speed of particles at birth. The higher the setting, the faster the particles move. The Slider values are

0-5. You can also use the dialog box to set values between -1024 and 1024. Negative settings reverse the direction of the particles.

Birth Rate

Birth Rate controls how quickly particles are produced. The higher the Birth Rate, the greater the density of new particles created. The Slider values are between 0 and 20. You can also use the dialog box to set values between 0 and 1024.

The higher the Birth Rate, the longer the effect takes to render.

Longevity

Longevity describes how long particles exist. The higher the Longevity setting, the longer the particles exist. Longevity cannot be animated. The Slider values are between 0 and 4. You can also use the dialog box to set values between 0 and 3,000.

Birth Rate and Longevity work hand-in-hand. If you set a high Birth Rate and a high Longevity, expect to wait a while longer than you would for lower settings.

Gravity

Use the Gravity feature to give weight to the particles. After their initial velocity, Gravity pulls them down. The higher the Gravity setting, the more the particles "weigh." "Heavier" particles fall more rapidly. A negative Gravity setting makes the particles light enough to rise. The "lighter" the particles, the faster they rise. The Slider values are between -2 and 2. You can also use the dialog box to set values between -1024 and 1024.

Air Resistance

Air Resistance slows particles. Increase the setting to slow them more quickly.

Direction

Direction sets the direction in which the particles will move.

Turbulence

Turbulence gives particles a more random motion. The higher the Turbulence setting, the greater the randomness of particle motion.

The Slider values are between 0 and 2. You can also use the dialog box to set values between -1024 and 1024.

Turbulence affects each animation type in a different way. Some animations, such as "Explosive," do not use Turbulence.

Opacity Map

The Opacity Map controls the opacity of the particles over their lifetime. Use the Opacity Map pop-up to choose the type of mapping you want.

Fade Out—The particles start at Max Opacity, and then fade out.

Fade In—The particles start out being completely transparent and fade to Max Opacity.

Fade In & Out—The particles start out being completely transparent, fade in to Max Opacity, then fade back out to complete transparency.

Fade Out & In—The particles start at Max Opacity, fade out to complete transparency, then fade back to Max Opacity.

Oscillate—Each particle oscillates continually between Max Opacity and complete transparency.

Fade Out Fast —The particles remain at Max Opacity until just before the end of their lifetime. They fade out fast, like sparks going out.

Constant—The particles remain at Max Opacity from birth to death

Max Opacity

Max Opacity sets the highest level of opacity for the particles.

Color Map

The Color Map defines how particle colors are interpolated from Birth to Death. Choose the mode you want from the pop-up.

Birth-Death uses the Birth and Death colors (see below) chosen for color transition.

Original-Death—The birth color is taken from the position in the original image where the particle originated. It changes over its lifetime into the defined Death Color.

Birth-Original—The particle starts at the defined birth color. The death color is taken from the original image where the particle originated.

Original-Original—The particle takes its color from the original image and retains that color throughout its lifetime.

Birth Color

Choose a color for the particles at birth.

Death Color

Choose a color for the particles at death.

Particle Animation

Use the Particle Animation pop-up to select a type of motion for the particles.

Explosive—The particles spread evenly in all directions with random speed. This effect is useful for creating fireworks, which you can simulate by pulsing the Birth Rate between zero and a high value.

Example of Explosive particles.

Fractal Explosive—Particles are spread in a pattern according to a fractal model. Alter the model by changing the setting on the Direction control. This effect is useful for creating an uneven look, for example a natural explosion. Direction controls the fractal model.

Fractals are not interpolated. This means there will be sharp transitions if Direction is animated.

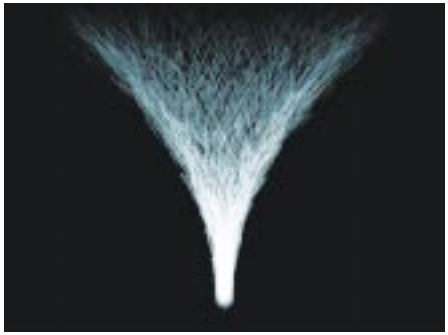
Twirl creates a whirlpool effect. The Twirl goes in one direction, and the particles spread evenly. Twirl is controlled by the Direction Phasewheel. Air Resistance controls rotation speed deceleration.

Example of Twirl particles.

Twirly creates a random rotation Twirl, with particles that spread evenly. The Twirl is controlled by the Direction Phasewheel. Air Resistance controls rotation speed deceleration.

Example of Twirly particles.

Vortex creates a whirling, funnel-like effect. The particles rotate upwards. Gravity controls the width of the vortex. Direction Phasewheel controls rotation speed. Air Resistance controls rotation speed deceleration.



Example of Vortex particles.

Fire animates the particles to oscillate while rising. Turbulence controls the amplitude of oscillation.

Example of Fire particles.

Since fire burns upward, a positive Gravity setting makes the particles rise rather than fall.

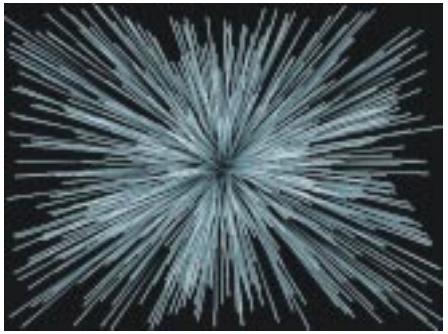
Direction—Particles spread evenly in the direction set in the Direction control. Turbulence defines the area covered by the effect. Turbulence defines the area covered by the effect.

Example of Direction particles.

Direction Normalized—Particles spread evenly in the direction set in the Direction control. All particles have the same speed. Turbulence defines the area covered by the effect.

Bi-Directional—Particles spread evenly in opposite directions, set in the Direction control. Turbulence defines the area covered by the effect.

Bi-Directional Normalized—Particles spread evenly in opposite directions, set in the Direction control. All particles have the same speed. Turbulence defines the area covered by the effect.



Example of Bi-Directional Normalized particles.

Jet—Particles inherit motion from the Producer's movement. Turbulence adds randomness to the particle motion.

Example of Jet particles.

You must animate the Producer to create this effect.

Jet Sideways—Particles inherit motion from the Producer's movement, and direct it sideways. Turbulence adds randomness to particles motion.

You must animate the Producer to create this effect.

Particle Objects

Choose the shape you want from the Particle Objects pop-up.

Pixel—Each particle is a single pixel. In motion, the pixels become lines.

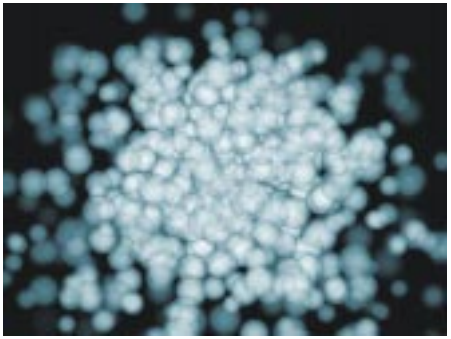
Antialiased Pixel—Particles are antialiased lines.

Star—The particles are four-pointed stars.

Example of Stars in an explosion particle animation.

Drop—The particles are shaped to simulate drops of water.

Shaded Sphere—The particles are spheres, darkened at the edges.

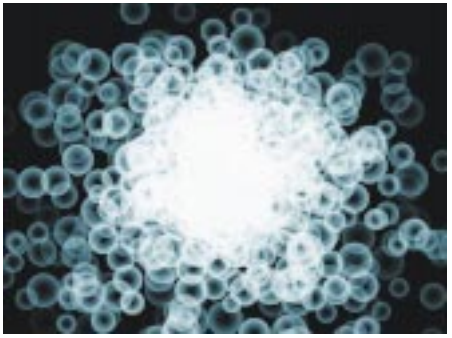


Example of Shaded Spheres in an explosion particle animation.

Faded Sphere—The particles are spheres, faded at the edges.

Shaded & Faded Sphere—The particles are spheres, which are both darkened and faded at the edges.

Bubble—The particles are spheres, faded toward their centers.



Example of Bubbles in an explosion particle animation.

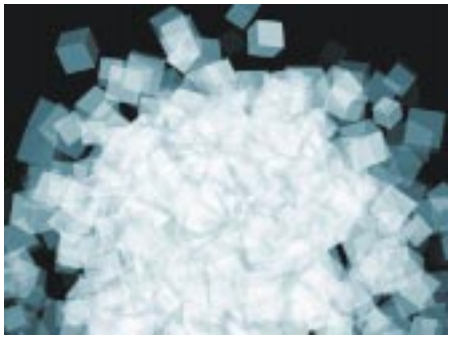
Motion Polygon—The particles are polygons. The higher the speed, the larger the particles.

3D Polygon—Particles are 3D polygons, shaded as if the light source were the viewer's eye. Rotation speed can be controlled by the Direction Phasewheel.

Example of 3D Polygons in an explosion particle animation.

3D Squares—Particles are 3D squares, shaded as if the light source were the viewer's eye. Rotation speed can be controlled by the Direction Phasewheel.

Cuby—Particles are cubes, shaded as if the light source were the viewer's eye. Rotation speed can be controlled by the Direction Phasewheel.

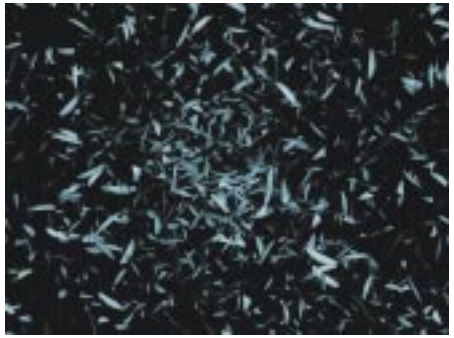


Example of Cuby particles in an explosion particle animation.

TetraHedrons—Particles are tetrahedrons, shaded as if the light source were the viewer's eye. Rotation speed can be controlled by the Direction Phasewheel.

FE—Particles are shaped like the letters "FE," shaded as if the light source were the viewer's eye. Rotation speed can be controlled by the Direction Phasewheel.

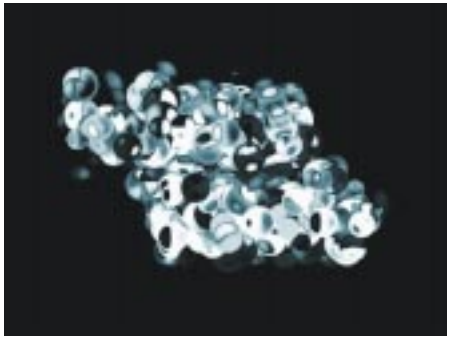
Textured Poly—Particles are 3D polygons, shaded as if the light source were the viewer's eye. They also take on the texture of the source layer. Rotation speed can be controlled by the Direction Phasewheel.



Example of Textured Poly in an explosion particle animation.

Textured Square—Particles are 3D squares, shaded as if the light source were the viewer's eye. They also take on the texture of the source layer. Rotation speed can be controlled by the Direction Phasewheel.

Lens Convex—Particles are shaped like convex lenses.

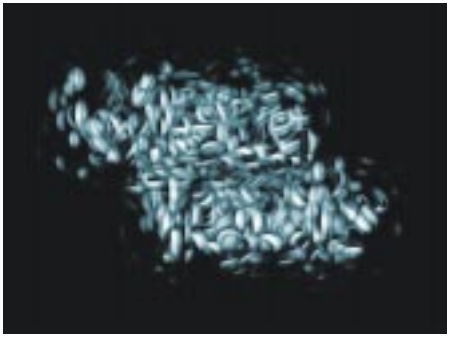


Example of Lens Convex in an explosion particle animation.

Lens Concave—Particles are shaped like concave lenses

Lens Fade—Particles are shaped like concave lenses fading toward the edges.

Lens Darken Fade—Particles are shaped like concave lenses, darkening and fading toward edges.



Example of Lens Darken Fade in an explosion particle animation.

Lens Bubble—Particles are shaped like bubbly lenses, fading inward.

Particle Birth Size

Use this feature to set the size of the particles at birth. Slider values are between 0 and 4. You can also use the dialog box to set values between 0 and 1024

Particle Death Size

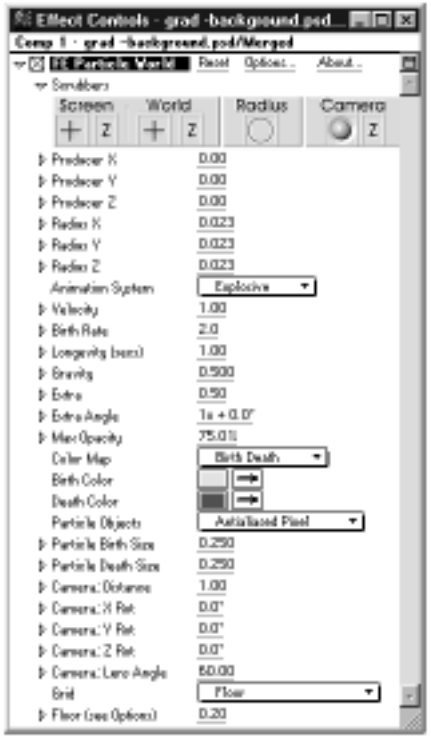
Use this feature to set the size of the particles at death. Slider values are between 0 and 4. You can also use the dialog box to set values between 0 and 1024.

FE Particle World

The FE Particle World provides a three-dimensional environment for particle generation and animation. FE Particle World contains controls for particle behavior in the third dimension, for the placement and movement of a virtual camera, and provides visual guides to help you navigate through this three-dimensional environment.

Realistic 3D behavior and sophisticated camera tools enable you to create animations that fly directly through a fiery explosion, sparkling fountain, or stream of glowing, golden coins.

FE Particle World Controls



Use the FE Particle World controls to set the type action and motion properties of the particles.

Almost all controls can be animated. Longevity, however, is one parameter that should remain static. FE Particle World fully supports time remapping.

Scrubbers

The Scrubbers are indirect manipulation tools. You drag them to change the settings in one or more of the controls.

Clicking on the labels ("Screen," "World"....) within the Scrubber Palette will bring up a numeric input dialog.

To reset a single **Scrubber** *control to its default value, Command-click on it.*

Standard Macintosh/Windows Shift key constraints are also available. The Control/Ctrl key toggles available control options.

Screen

Drag on this control to change the location of the producer relative to the current camera position and angle. Use the "+" symbol to move along the X and Y axes, and the "Z" to move along the Z axis.

World

Drag on this control to change the location of the producer based on absolute Particle World environment coordinates. Use the "+" symbol to move along the X and Y axes, and the "Z" to move along the Z axis.

Radius

Drag to change the producer radius interactively.

Camera

Drag on the globe to rotate your camera around the X or Y axes interactively. Drag on the "Z" to change Camera Distance.

Producer X, Y and Z

These controls determine the location of the producer at any given point in time. Positive Z-axis values move the producer farther away, while negative Z-axis values move it closer.

Radius X, Y and Z

These controls determine the size of the producer in each of the three dimensions.

Animation System

Use this pop-up to select from the following twelve animation algorithms:

Explosive—Particles spread evenly in all directions. Useful for creating particle bursts (i.e., fireworks) by pulsing the Birth Rate between zero and a high value.

Direction Axis—Particles spread evenly in a direction controlled by Extra Angle. Extra Angle rotates the producer around the axis specified in the Direction dialog (accessed via the Options dialog). The Extra control adds a randomness to the direction of the particles, resulting in a cone-shaped effect.

Cone Axis—Particles spread evenly in a cone shape whose width is determined by the Extra Angle control. The cone shape is best described as an umbrella where Extra Angle folds the umbrella along the axis specified in the Direction dialog (accessed via the Options dialog). The Extra control adds a randomness to the direction of the particles.

Viscous makes the particles spread evenly in all directions, but the initial speed of the particles is reduced by the Extra setting. This is useful for simulating more realistic animations by including "air resistance" for the particles.

Twirl creates a whirlpool-like, single-direction, rotating twirl, with the particles spreading evenly with the initial rotation. The Extra control determines the rotation deceleration.

Twirly creates a single-direction rotating Twirl. Particles spread evenly with initial rotation. Extra adds rotation around the producer when Velocity is set very low. Extra Angle controls the rotation speed of the Twirl.

Vortex creates an upward rotation with accelerating width and decelerating rotation speed.

Fire creates a fairly realistic fire model wherein the particles oscillate while rising.

Jet creates particles that inherit the producer's movement. The Extra control adds random motion to the particles.

Jet Sideways creates particles that inherit the producer's velocity, but channels it into sideways motion. The Extra control adds random motion to the particles.

Fractal Omni—Particles are spread with speed and direction determined by a fractal model. Changes in the fractal model are smoothly interpolated if the Extra Angle control is keyframed. This type of particle animation is useful for creating any effect where an uneven look is desired (e.g., natural explosions). The Extra control determines the frequency of the fractal noise used in the animation. The Extra Angle control determines the fractal model used.

Fractal Uni—Particles erupt from the producer volcanically, with speed and direction determined by a fractal model. Changes in the fractal model are smoothly interpolated if the Extra Angle control is keyframed. This type of particle animation is useful for creating any effect where an uneven look is desired (e.g., natural explosions). The Extra control determines the frequency of the fractal noise used in the animation. The Extra Angle control determines the fractal model used.

Velocity

Velocity describes the initial speed of the particles as they are emitted from the producer. Once ejected, the speed and direction of the particles is determined largely by gravity and other "natural" forces.

Birth Rate

Birth Rate describes the number of particles born at any given point in time.

Longevity

Longevity sets the life span (in seconds) of the particles.

Gravity

Gravity controls the strength of the gravitational force.

Extra

This control is used to set an "extra" factor. The effect varies depending on the particle animation system being used.

Extra Angle

This control is used to set an "extra angle" factor. The effect varies depending on the particle animation system being used.

Max Opacity

Max Opacity sets the maximum opacity of the particles. A particle's opacity changes over its lifetime according to the current opacity map.

Color Map

Use this pop-up to select from the following four Color Map options:

Birth-Death—Particles appear with the specified Birth Color and shift toward the specified Death Color, changing completely just before they disappear.

Original-Death—Particles appear with a color sampled from the original source image and shift toward the specified Death Color.

Birth-Original—Particles appear with the specified Birth Color and shift toward a color sampled from the underlying source image.

Original-Original—Particles maintain a color sampled from the underlying source image for their entire lifespan.

Birth Color

Choose the color of particles at birth.

Death Color

Choose the color of particles at birth.

These colors can be superseded by a user-defined gradient of up to five custom colors by using the Color Map dialog (accessed via the Options dialog).

Particle Objects

Use this pop-up to select from among the following twenty possible particle objects: Pixel, Antialiased Pixel, Star, Shaded Sphere, Faded Sphere, Darkened & Faded Sphere, Bubble, Motion Polygon, Motion Square, Polygon, Square, Textured Polygon, Textured Square, Tetrahedron, Cuby, Lens Convex, Lens Concave, Lens Fade, Lens Darken Fade, and Lens Bubble.

Particle Birth Size

Particle Birth Size controls the relative size of the particles when they first appear.

Particle Death Size

Particle Death Size controls the relative size of the particles when they disappear.

Camera Distance

Camera Distance sets the distance from the camera to the center of the Particle World environment.

Camera X, Y and Z Rotation

These controls rotate the camera on its own X, Y and Z axes. Changing the camera's X rotation turns it left and right, changing its Y rotation points it up or down, and changing its Z rotation banks the camera left or right.

Camera Lens Angle

The Camera Lens Angle describes the type of "virtual lens" used for rendering. Lowering this value shrinks the camera's focal point, effectively zooming in on the producer (or whatever the camera is facing). Increasing this value opens the camera's focal point to produce a "wide angle" view.

Grid

Use this pop-up menu to enable and select grid alignment.

Floor

Use this slider (or click on the current value) to set the relative height of the floor (i.e., the distance from the floor to the center of the Particle World environment).

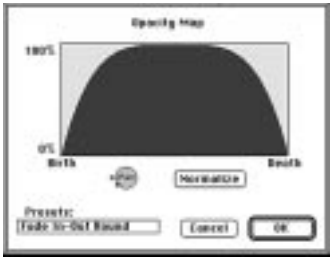
Options

Clicking on Options brings up the Options dialog, which allows access to ten secondary dialog boxes for specifying a wide variety of FE Particle World parameters.

Note: All of the parameters within the Options dialogs are static. They cannot be animated with key frames.

Opacity Map

This dialog allows you to modify the opacity levels of your particles at various stages in their lives.



Canvas

The area directly beneath the Opacity Map label graphically depicts the opacity map currently in use. The left side of the canvas represent the opacity level at birth. The right side represents the opacity level at death. You can drag within this area to customize the opacity map.

Soften

Click the dynamic **Soften** button to subtly soften (or average) the current opacity levels. Press and hold on the **Soften** button for gradually increasing levels of softness.

Normalize

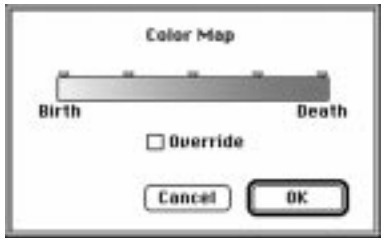
Click on the Normalize button to spread the current minimum and maximum values across the entire range of legal values.

Presets

Use the Presets pop-up to choose from a list of available Opacity Map presets.

Color Map

The Color Map dialog consists of a gradient bar representing the changing colors of your particles over their lifespan. Clicking on each of the five small arrows over the gradient bar will bring up a standard Apple/Windows color picker. By selecting different colors from these color pickers, you can create a gradient of up to five colors for your particles to metamorph through on their way from birth to death.



Enable the Override checkbox to use the Color Map for your particles (as opposed to the Birth and Death colors).

Options: Grid

The Grid Settings dialog gives you control over the reference grid and other visual guides.

Horizon

The Horizon option displays a line at the horizon. This can be useful when tilting or rolling the camera. Click the color chip to change the Horizon color.

Position

The Position option displays a marker for the producer. The producer is at the “x” atop the line perpendicular to the grid. Click the color chip to change the Position marker color.

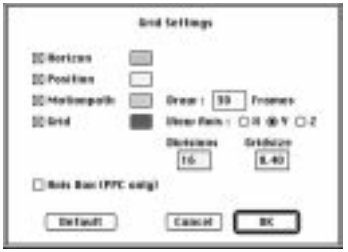
Motionpath

The Motionpath option displays a line that shows the producer’s positions throughout the animation. Click the color chip to change the Motionpath color.

Note: The Motionpath won’t be visible until you’ve set key frames to animate the producer position.

Grid

The Grid option displays the floor (or wall) grid. Click the color chip to change the Grid color.



Draw

Draw determines the number of sample points for the producer motionpath. Higher values increase detail in the motionpath.

View Axis

View Axis determines which plane (as seen from X, Y or Z) the grid appears on. This determines the location of the floor plane.

Division

Division sets the total number of squares in the grid.

Gridsize

Gridsize controls the scale of the grid.

Axis Box

The Axis Box option displays a small, reference box in the upper left corner of the image. This box shows the World Axis in the current view.

Render Settings

Use this dialog to select from the following rendering options:

Render Particles

Click on the desired radio button to specify which of the following particles you want rendered:

Full Render—Renders all particles. This is the default option.

Above Floor—Renders only the particles that exist above the floor.

On/Under Floor—Renders only the particles that exist on or below the floor.

Render Animation

Click on the desired radio button to specify which of the following animation options you want to use:

Standard—Renders the particles normally. This is the default setting.

Reflected on Floor—Renders the particles as a reflection on the floor. Ideal for mirrored surface effects.

Projected on Floor—Renders the particles as a projection on the floor. Perfect for shadow effects.

Depth Cue and Distance

Click on a radio button to select from these three choices:

Disabled—No depth cueing. This is the default setting.

Fade—The particles fade away as they move further from the camera.

Fog—The particles change to the fog color as they move further from the camera. Click on the color swatch to pick a new fog color.

Distance sets the rate at which depth cuing increases. Higher settings increase the Depth Cue effect. Distance is an arbitrary value: it doesn't correspond to standard units of measure

Floor

Click on a radio button to select how the particles will react when they strike the floor.

Ignored—Particles pass through the floor as if it wasn't there. This is the default setting.

Ice—Particles stop falling and spread out along the floor.

Glue—Particles stop moving altogether when they hit the floor.

Bounce—Particles bounce back up when they hit the floor. The Amount parameter determines the maximum height of the bounce, the Random parameter determines the amount of variety in the bouncing particle's height, and the Spread parameter determines the amount of variety in the bouncing particle's direction.

The Viscous, Twirl, Twirly, Vortex and Fire animation systems ignore Bounce and Glue.

Delay Particle Release

This feature controls how long a particle will cling to the producer (relative to its lifespan) before beginning its assigned motion (based on the Animation System selected).

Composite with Original

When selected, the source image will be composited within the particle world.

Motionblur

When selected, the **FE Particle World** plug-in will add its own motion blur effect to the particle animation.

On 68k Macintoshes (i.e., non-PowerMac computers) motion blur is not applied to texture-wrapped polygons and squares.

Gravity

The Gravity dialog allows you to set a direction for the gravitational force.

Direction

The Direction Axis dialog lets you set the particle emission direction for two of the Animation Systems—Direction Axis and Cone Axis.

Light

The Light Direction dialog lets you set the position of the directional light used to texture the particles.

Rotation

The Rotation Direction dialog lets you control the spin of emitted polygon particles.

Open/Save Settings

Clicking either of these buttons opens a standard Apple/Windows Open/Save dialog box for loading or saving Option settings (but not Effect Control settings).

Default, Cancel and Accept

Clicking the Default button resets all parameters to their default settings. Clicking the circle-slash symbol ignores changes and exits the dialog box. Clicking the circle-checkmark symbol accepts changes and exits the dialog box.

FE Pixel Polly

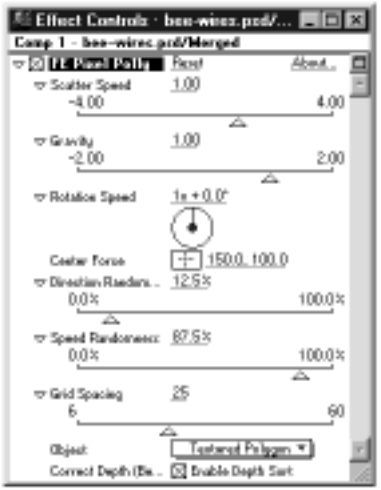
FE Pixel Polly breaks the source layer into polygons, with or without texture. The effect is something like a pane of glass shattering and flying apart. You can control the Gravity and Rotation Speed of the shards, as well as the amount of Randomness in Direction and Speed. You can also set the position for the shatter CenterForce-i.e., the focal point of the explosion.

All speed settings take effect from the first frame of the animation.

By default, rotation speed is set to one revolution per second.

A sample three-step animation using FE Pixel Polly.

FE Pixel Polly Controls



Use the FE Pixel Polly controls to set the scatter intensity, direction and speed of image polygons.

Scatter Speed

Use Scatter Speed to control the speed at which the shards fly. The Slider values are between -4 and 4 You can also use the dialog box to select between of -128 and 128.

A negative setting causes the image shards to implode before flying outward.

Gravity

Gravity controls the weight of particles. A higher gravity setting gives the shards more weight, causing them to fall more quickly.

Rotation Speed

Rotation Speed controls how fast the shards spin.

A setting of zero degrees means the shards do not rotate.

Center Force

Center Force sets the focal point of the explosion that sends the shards flying.

Direction Randomness

Direction Randomness affects the direction in which the shards fly. A lower setting causes the shards to fly off in a more or less uniform pattern-i.e., straight outward from the point of origin. A higher setting gives the explosion greater turbulence, causing the shards to fly off in random directions.

Speed Randomness

Speed Randomness lets you control the uniformity of particle speed. A lower setting causes all the shards to fly apart at more or less the same speed. A higher setting causes more variation in the speed of different shards, creating a more chaotic effect.

Grid Spacing

Use Grid Spacing to control the size of the grid along which images shatter. A larger grid size produces larger shards. A smaller grid size produces smaller shards.

Grid Spacing is an initial setting for how you want to split the image. It should not be animated.

Object

Use the Object pop-up to select the type of shard you want.

Polygon—The original image is converted to polygon shapes, using the source image's color as a color map.

Textured Polygon—The shards are shaped like polygons which retain the texture of the source image.

Square—The original image is converted to squares, using the source image's color as a color map.

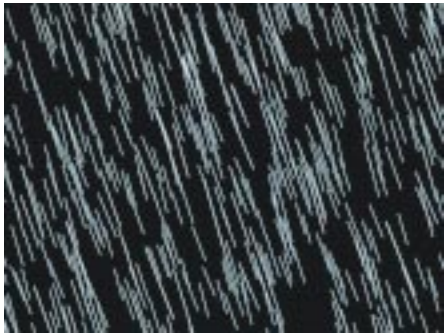
Textured Square—The shards are shaped like squares which retain the texture of the source image.

Enable Depth Sort (Best Quality Only)

Enable this option to create more accurate 3D rendering.

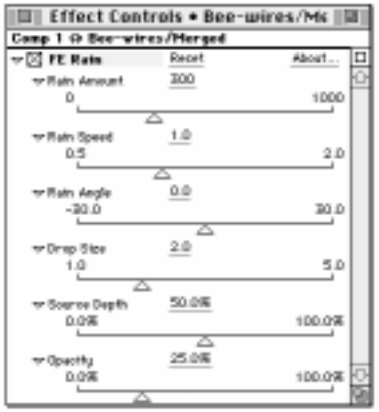
FE Rain

FE Rain creates a scattering of angled streaks that look like falling rain.



FE Rain at a moderate intensity and a 15° angle.

FE Rain Controls



Use the FE Rain controls to set the amount, speed and angle of the rain.

Rain Amount

Rain Amount controls the number of rain drops. The Slider values are 0-1,000. You can also use the dialog box to select values up to 10,000.

Rain Speed

Rain Speed controls how fast the rain falls. The Slider values are 0.5 to 2. You can also use the dialog box to set values between 0.0625 and 10.

Rain Angle

Rain Angle controls the angle of the falling rain. The Slider values are between -30 and 30 degrees. You can also use the dialog box to set values between -60 and 60 degrees.

Drop Size

Drop Size determines the size range of the rain drops. The Slider values are between 1 and 5. You can also use the dialog box to set values between 0 and 30.

Source Depth

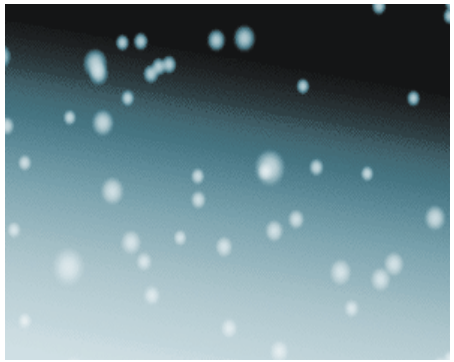
Source Depth lets you control the layering of the rain with the source layer. You can give the rain the appearance of being in front—or behind—the source image. The values are between 0 and 100 in both the Slider and dialog box.

Opacity

Opacity sets the visibility of the raindrops. The values in both the Slider and dialog box are between 0 and 100 percent, with 100 percent being completely opaque.

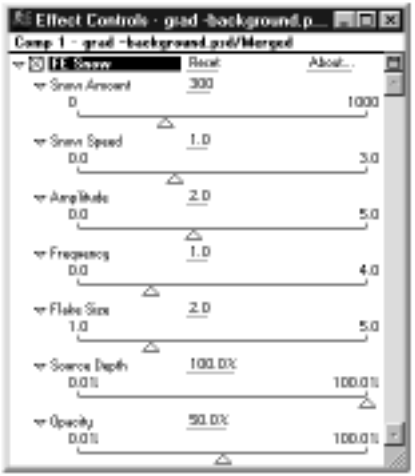
FE Snow

FE Snow creates gently falling snow flakes. You can set the wobbling amplitude and frequency of the snow to produce flurries.



FE Snow creates falling snowflakes.

FE Snow Controls



Use the FE Snow controls to set the amount of snow and the speed at which it falls.

Snow Amount

Snow Amount determines the amount of snow in the image. The Slider values are between 0 and 1,000. You can also use the dialog box to set values between 0 and 32,000.

Snow Speed

Snow Speed controls how fast the snow falls. The Slider values are between 0 and 3. You can also use the dialog box to set values between -30 and 30. A negative speed causes the snow to rise rather than fall.

Amplitude

With Amplitude, you can add a "wobbling" effect to your snow. The Slider values are between 0 and 5. You can also use the dialog box to set values between 0 and 50. The higher the value the greater the wobble.

Frequency

Frequency controls the speed of the "wobbling" effect in your snow. Slider values are between 0 & 5. You can also use the dialog box to select values between 0 and 50.

Flake Size

Flake size sets the size range of the snow flakes. The Slider values are between 1 and 5. You can also use the dialog box to set values between 0 and 50.

Source Depth

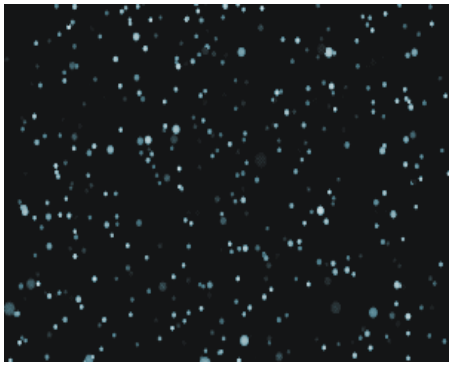
Use Source Depth to give the snow the appearance of being in front or behind the source image. The values are between 0 and 100 in both the Slider and dialog box.

Opacity

Use Opacity to make the snowfall harder or easier to see through. The values in both the Slider and dialog box are between 0 and 100 percent, with 100 percent being completely opaque.

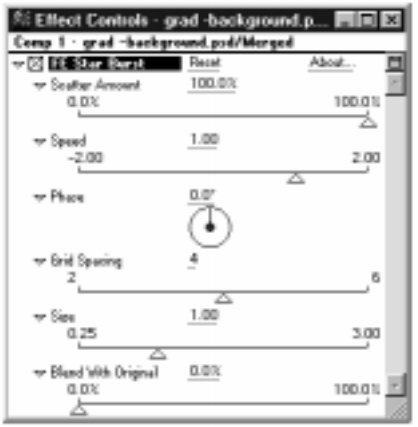
FE Star Burst

Use Star Burst to break an image into stars and spread them through space. You can animate this effect to make it appear as if the viewer is flying through a star field.



FE Star Burst breaks the image into stars and scatters them.

FE Star Burst Controls



Use the FE Star Burst controls to set the scatter intensity and speed of the stars.

Scatter Amount

Use Scatter amount to control the amount of space between spheres. The Slider values are between 0 and 100%. You can also use the dialog box to set values between -10,000 and 10,000.

Speed

Use Speed to set the rate at which the viewer seems to travel through the star field. The Slider values are between -2 and 2. You can also use the dialog box to set values between -50 and 50. A negative values creates the illusion of traveling backwards. This plug-in is useful for "time travel" type effects.

Phase

Use Phase to align the effect to the original position of the layer.

Phase is not meant for animation.

Grid Spacing

Use Grid Spacing to control how tightly packed the stars are. The Slider values are between 2 and 6. You can also use the dialog box to set values between 1 and 32.

Size

Size controls the size of the stars. The Slider values are 0.25 to 3. You can also use the dialog box to set values between 0 and 25. The higher the value, the bigger the stars.

Blend With Original

Blend With Original lets you set a transparency level for compositing the effect with the original image. 100% gives you only the original image. A setting of 50% produces an even blend between the effect and the original.