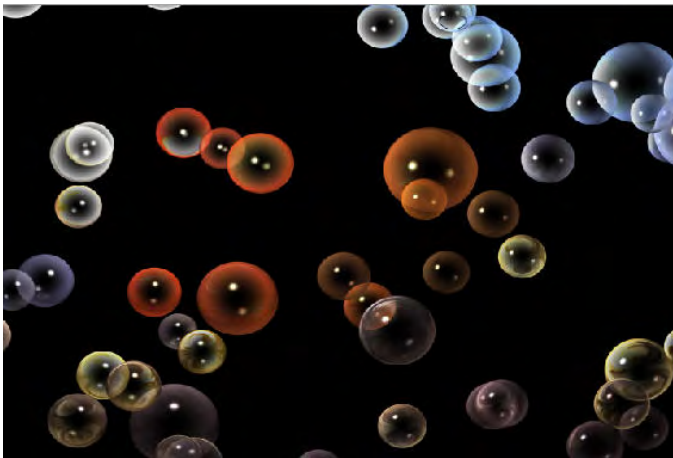


FEC Bubbles

FEC Bubbles creates a bubble effect in the selected layer.



Unfiltered Image



Filtered Image

Controls

Bubble Amount sets the number of bubbles to use in the effect. The number of bubbles that appear in the effect may not correspond to the number that actually appears in the image.

Bubble Size controls the overall size of the bubbles.

Size Spread is a slider that controls how much variability there is in the bubble sizes. There is always a certain amount of variation in apparent bubble size since some bubbles are farther away than others, but this Size Spread control allows an increasing of size variation to create a greater mix of bubble sizes.

The **Drift** group controls how bubbles drift across the layer over time. These parameters determine the main drift direction and speed of the bubbles, as opposed to the **Wobble** group, which controls how the bubbles randomly wobble as they drift.

The Drift options are:

- **Drift Speed** controls how fast bubbles drift across the layer.
- **Speed Spread** controls the randomness of the bubble speeds. Larger values produce more variation in bubble speed - yielding a more random overall appearance to the bubble field.



There will always be some baseline randomness to the speed at which bubbles appear to drift across the layer since some bubbles are farther in the background than others, thus taking longer to cross the layer in 3D space.

- **Drift Direction** controls the overall direction in which the bubbles drift. This is a non-animatable control.
- **Direction Spread** controls the randomness of the drift directions. When Direction Spread is 0, all parameters drift in the same direction. When Direction Spread reaches 100, every bubble travels in a completely random direction.

The **Wobble** group controls how bubbles oscillate back and forth as they drift along. These oscillations are perpendicular to the main drift direction of the bubbles. E.g. a bubble drifting upwards will wobble left and right as it drifts. These controls can be used to simulate the random fluctuations real bubbles experience due to small air currents.

The Wobble options are:

- **Wobble Amplitude** controls the size of the bubble displacement due to wobbling. Large amplitudes produce large side-to-side wobbles as a bubble drifts along. Small amplitudes produce bubbles that travel straight along their drift paths.
- **Amplitude Spread** controls the randomness of the wobble amplitude. When Amplitude Spread is set to 0, all bubbles wobble with the same amplitude. When Amplitude Spread is set to large values, the apparent randomness of the overall effect is increased as each bubble wobbles by different amounts.
- **Wobble Frequency** controls the speed of the wobbling. The higher the wobble frequency, the faster the bubbles will wobble back and forth as they drift.
- **Frequency Spread** controls the randomness of the wobble frequency. When Frequency Spread is set to 0, all bubbles wobble with the same frequency. When Frequency Spread is set to large values, the apparent randomness of the overall effect is increased as each bubble wobbles with different frequencies.

The **Deflector** group allows controls over a “deflector” point in the layer that pushes bubbles away as they approach, thus generating a region of the layer that is free of any bubbles.

- **Force** controls the strength of the bubble deflection. When set to 0, the deflector has no effect. Higher values push bubbles away with greater force creating regions where no bubbles enter.
- **Radius** controls the size of the region affected by the deflection force.
- **Position** controls the location of the deflection force. Be aware that animating the Deflector Position can produce sudden jumps in bubble location (akin to popping in and out of existence) and is generally not recommended. Although, animating this control can create some interesting bubble displacement movements when the bubble speed is set to a small values.

The **Reflection** group controls how the source layer is mapped onto the bubbles as they travel.

- The **Reflection Type** menu specifies the main reflection style. When set to **Inverse**, the bubbles map the source layer as if heavily magnified through a round lens at short distances. When set to **World**, the bubbles map the source layer as if moderately distorted through a lens at long distances. When set to **Dynamic**, the **Reflection Amount** slider is enabled and can be used to animate along the continuum from Inverse to World style mapping.
- The **Reflection Amount** is contextually disabled unless Reflection Type is set to Dynamic. Reflection Amount controls the degree and style of the distortion when mapping the source image onto the bubbles. Positive values simulate distortion as if through a lens at long distances. (A value of 50 corresponds to the reflection type *World*.) Negative values simulate distortion as if through a lens at short distances. (A value of -50 corresponds to the reflection type *Inverse*.) A value of 0 yields an undistorted mapping.
- The **Reflection Source** menu allows controlling which parts of the source image are mapped to a given bubble. When set to **Floating**, the bubbles map to the source image directly below their current location. When set to **Pinned**, all bubbles, irrespective of their current location, map to the same source image location specified by the **Pin Position** control. Use the **Pin Strength** control to animate between these two extremes.
- **Pin Position** controls the source image location when Pinned is chosen from the Reflection Source menu.
- **Pin Strength** controls the intensity of the “pinning” effect - allowing intermediate values between fully Floating and fully Pinned source mapping. When set to intermediate values, the bubble mapping locations are offset towards the Pin Position by varying amounts.
- The **Invert Reflection** checkbox inverts the reflection mapping left to right, and top to bottom.

The **Transparency Map** menu controls the transparency across an individual bubble. **Flat** produces solid bubbles. **Fade In** produces bubbles that are fully opaque at the edge and fade towards fully transparent in the center. **Fade In Sharper** does the same as Fade In but with a faster fade rate. **Fade Out** produces bubbles that are fully opaque in the center and gradually fade towards the edge. **Fade Out Softer** does the same as Fade Out but with a faster fade rate.

Bubble Opacity is a slider that controls the overall opacity of bubbles to allow fading the entire bubble field.

Shading Type controls the type of lighting added to the bubbles. **None** produces “flat” bubbles without lighting applied. **Lighten** produces bubbles that get lighter near their edges. **Darken** produces bubbles that get darker near their edges. **Standard** enables full standard 3D lighting controls.

Shading is a slider that controls the intensity of the shading applied when using Lighten or Darken shading types.

The **Light Geometry** parameter group contains all the parameters needed to specify and place standard 3D lighting in your scene. These parameters are contextually disabled unless Shading Type is set to Standard. The Light Geometry options are:

- **Light Type** determines the source of your light as **Distant** or **Point**.
 - Distant is light emitting from a specific direction.
 - Point is omni directional – emitting light uniformly in all directions.
- **Elevation** controls the height of your light in relation to the scene.
- The **Direction** controls set the angle of the light source.
- The **Position** controls set the placement of the light in X and Y space.

The **Light Properties** parameter group contains all the parameters needed to define the look of your 3D lighting. These parameters are contextually disabled unless Shading Type is set to Standard. The Light Properties options are:

- **Light Intensity** controls the concentration of light from dim to hot.
- **Light Color** allows you to choose from a range of colors using a color picker or color popup menu.
- **Ambient** controls the indirect light that affect the uniform brightness of the bubbles in the scene.
- **Diffuse** controls how incoming light from all directions spreads out over the bubbles.
- **Specular** controls the amount of focused light that reflects off the surface of the bubbles.
- **Specular Spread** controls the size of the specular highlight.
- **Metallic** determines the “shininess” of the ball surface. 0 is very reflective and 100 is dull and matted.
- **Noise** controls the level of video noise added to the objects.

Random Seed determines which value is input to the random number generator used by the filter. Adjust this value when you like the overall effect but want to adjust the random configuration of the bubbles.

Mix with Original blends the source and filtered images. Use this parameter to animate the effect from the unfiltered to the filtered image without adjusting other settings, or to reduce the effect by mixing it with the source image.

If you are using the controls in the **Pixel Chooser** parameter group, the **Apply PixelChooser** menu determines how the **PixelChooser** controls are applied to the image.



*At default, the Pixel Chooser parameter group and the Apply PixelChooser menu may be contextually hidden. Turning **On** the PixelChooser will make these parameters appear.*



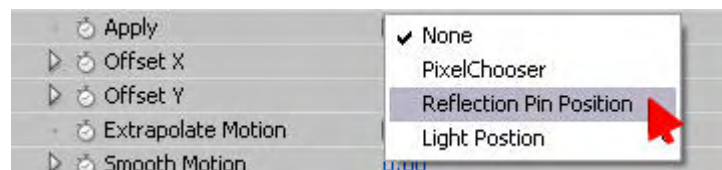
The Apply PixelChooser menu options are:

- **Mask Source**, which uses the PixelChooser to mask the source image alpha before applying the rest of the filter. This effectively restricts the regions in which bubbles are generated since bubbles are generated in regions of full alpha.
- **Mask Result** simply masks the results of the effect back with the original source layer – the basic PixelChooser post-processing approach.
- **Modify Bubble Size** uses the PixelChooser to modify the apparent **Bubble Size** amount. Bubbles originating in regions that are fully selected by the PixelChooser will be the size indicated by the **Bubble Size** parameter, whereas bubbles originating in partially selected regions will have their effective **Bubble Size** reduced. For bubbles originating in regions where the PixelChooser is zero, the **Bubble Size** is effectively zero and the bubbles disappear.
- **Modify Wobble Amplitude** uses the PixelChooser to modify the apparent **Wobble** amount. Bubbles originating in regions that are fully selected by the PixelChooser will have the full **Wobble Amplitude** amount applied, whereas bubbles originating in partially selected regions will have their apparent **Wobble** amount reduced. For bubbles originating in regions where the PixelChooser is zero, the **Wobble** amount is effectively zero.

The **Motion Tracker** parameter group allows you to track the motion of an object, and then use the motion path data to control another aspect of the effect by applying a matchmove to it. The parameters that can be affected depend upon the filter. *(For more information on using the Motion Tracker, please click on its **Help** banner located at the top of the Motion Tracker parameter group).*



Once an object is tracked, the track data can be applied to FEC Bubbles' PixelChooser, Reflection Pin Position, or its Light Position controls via the **Apply** menu located inside the Motion Tracker parameter group.



The **Pixel Chooser** parameter group contains the **PixelChooser** - which is included in many Boris filters (like Boris Continuum Complete), and provides several methods to selectively filter an image. *(For more information on using the PixelChooser, please click on its **Help** banner located at the top of the Pixel Chooser parameter group).*