



26.9.2 Editors - Properties Editor - Modifiers Properties Tab - Grease Pencil - Generate Modifiers

Table of content

Detailed table of content.....	1
Grease Pencil - Generate modifiers.....	5
Array.....	5
Build.....	7
Dot Dash.....	9
Length.....	11
Line Art.....	12
Mirror.....	17
Multiple Strokes.....	18
Simplify.....	19
Subdivide.....	20

Detailed table of content

Detailed table of content

Detailed table of content.....	1
Grease Pencil - Generate modifiers.....	5
Array.....	5
Count.....	6
Material Override.....	6
Relative Offset subpanel.....	6
Factor X/Y/Z.....	6
Constant Offset subpanel.....	6
Distance X/Y/Z.....	6
Object Offset subpanel.....	6
Object.....	6
Randomize.....	6
Offset.....	6
Rotation.....	6
Scale.....	7
Uniform Scale.....	7
Seed.....	7
Influence.....	7
Layer.....	7
Inverse Layers.....	7
Pass.....	7
Inverse Pass.....	7
Material.....	7
Invert Materials.....	7
Pass.....	7
Inverse Pass.....	7
Build.....	7
Mode.....	8

Sequential.....	8
Concurrent.....	8
Time Alignment.....	8
Align Start.....	8
Disappear.....	8
Transition.....	8
Start delay.....	8
Frames.....	8
Use Factor.....	8
Custom Range.....	8
Start.....	8
End.....	8
Influence.....	9
Layer.....	9
Inverse Layers.....	9
Pass.....	9
Inverse Pass.....	9
Dot Dash.....	9
Offset.....	9
Segment list.....	9
Add Segment.....	9
Remove Segment.....	9
Move Dash Segment up or down.....	9
Search element.....	9
Edit Box.....	9
Invert.....	10
Sort by name.....	10
Reverse.....	10
Dash.....	10
Gap.....	10
Radius.....	10
Opacity.....	10
Material Index.....	10
Influence.....	10
Layer.....	10
Inverse Layers.....	10
Pass.....	10
Inverse Pass.....	10
Material.....	10
Invert Materials.....	11
Pass.....	11
Inverse Pass.....	11
Length.....	11
Mode.....	11
Factor Start/End.....	11
Used Length.....	11
Curvature subpanel.....	11
Point Density.....	11
Segment Influence.....	11
Filter Angle.....	11
Invert.....	11
Influence.....	12
Layer.....	12

Inverse Layers.....	12
Pass.....	12
Inverse Pass.....	12
Material.....	12
Invert Materials.....	12
Pass.....	12
Inverse Pass.....	12
Line Art.....	12
Source Type.....	12
Collection.....	13
Collection.....	13
Layer.....	13
Material.....	13
Object.....	13
Object.....	13
Layer.....	13
Material.....	13
Scene.....	13
Layer.....	13
Material.....	13
Edge types subpanel.....	13
Crease.....	13
Allow Overlap.....	13
Geometry Processing subpanel.....	14
Custom Camera.....	14
Remove Doubles.....	14
Overlapping Edges as Contour.....	14
Instanced Objects.....	14
Clipping Boundaries.....	14
Crease on Smooth.....	14
Crease on Sharp.....	14
Style Subpanel.....	14
Thickness.....	14
Opacity.....	14
Occlusion Subpanel.....	14
Range.....	14
Material Mask.....	15
Masks.....	15
Exact match.....	15
Intersection subpanel.....	15
Collection Masks.....	15
Exact match.....	15
Face Mask Filtering subpanel.....	15
Invert.....	15
Boundaries.....	15
Chaining.....	15
Chain Intersection with Contour.....	15
Chain All Lines.....	15
Chain Loose Edges.....	15
Chain Loose As Contour.....	16
Chain Geometry Space.....	16
Image Threshold.....	16
Smooth tolerance.....	16

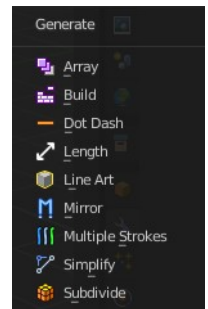
Angle Splitting.....	16
Vertex Weight Transfer subpanel.....	16
Filter Source.....	16
Invert Vertex Group.....	16
Match Output.....	16
Target.....	16
Composition.....	16
Overscan.....	16
Image boundary trimming.....	16
Depth Offset.....	17
Towards custom camera.....	17
Bake subpanel.....	17
Bake Line Art / Bake Line Art (All).....	17
Clear Baked Line Art / Clear Baked Line Art (All).....	17
Mirror.....	17
Object.....	17
Influence.....	17
Layer.....	17
Invert.....	17
Pass.....	17
Invert.....	18
Material.....	18
Invert.....	18
Pass.....	18
Invert.....	18
Multiple Strokes.....	18
Duplicates.....	18
Distance.....	18
Offset.....	18
Fade.....	18
Center.....	18
Thickness.....	18
Opacity.....	18
Influence.....	19
Layer.....	19
Invert.....	19
Pass.....	19
Invert.....	19
Material.....	19
Invert.....	19
Pass.....	19
Invert.....	19
Simplify.....	19
Mode.....	19
Fixed.....	19
Adaptive.....	19
Sample.....	20
Merge.....	20
Iterations.....	20
Influence.....	20
Layer.....	20
Invert.....	20
Pass.....	20

Invert.....	20
Material.....	20
Invert.....	20
Pass.....	20
Invert.....	20
Subdivide.....	20
Subdivision Type.....	21
Catmull-Clark.....	21
Simple.....	21
Subdivisions.....	21
Influence.....	21
Layer.....	21
Invert.....	21
Pass.....	21
Invert.....	21
Material.....	21
Invert.....	21
Pass.....	21
Invert.....	21

Grease Pencil - Generate modifiers

Some of the modifiers are just available for specific object types.

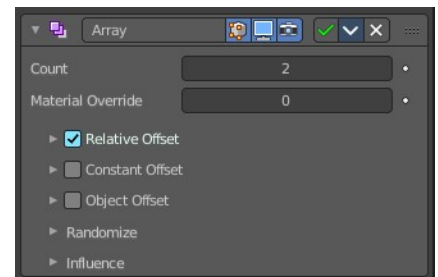
Left grease pencil object, right a mesh object.



Array

The Array modifier creates an array of copies of the base object. Each copy can offset from the previous one in any of a number of possible ways. Vertices in adjacent copies can be merged if they are nearby, allowing smooth Subdivision Surface frameworks to be generated.

This modifier can be useful when combined with tillable meshes for quickly developing large scenes. It is also useful for creating complex repetitive shapes.



Multiple Array modifiers may be active for an object at the same time. This allows to create complex three-dimensional constructs.

Hint for Offset Calculation. The transformation applied from one copy to the next is calculated as the sum of

the three different components (Relative, Constant and Object), each of which can be enabled/disabled independently of the others. This allows, for example, a relative offset of (1.0, 0.0, 0.0) and a constant offset of (0.1, 0.0, 0.0), giving an array of objects neatly spaced along the X axis with a constant 0.1 unit between them, whatever the original object's size.

Count

Number of Items

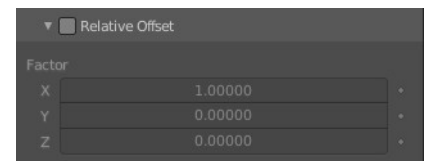
Material Override

Index of the material used for generated strokes. A value of 0 uses the original material.

Relative Offset subpanel

Factor X/Y/Z

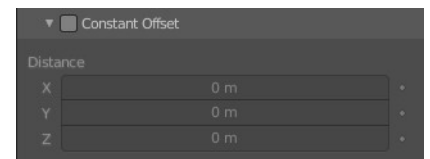
Adds a translation equal to the object's bounding box size along each axis to the offset, multiplied by a scaling factor. X, Y and Z scaling factors can be specified.



Constant Offset subpanel

Distance X/Y/Z

Adds a constant translation component to the duplicate object's offset. X, Y and Z constant components can be specified.



Object Offset subpanel

Adds a transformation taken from a chosen object relative to the current object to the offset.



Object

Choose an object.

Randomize

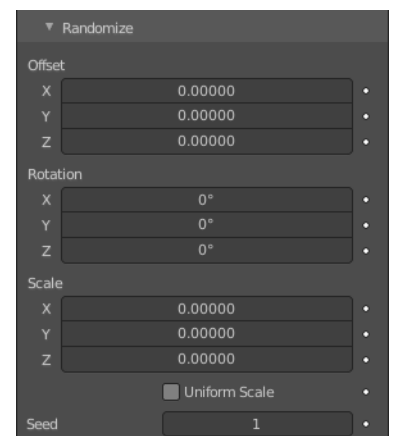
Randomize the transform values.

Offset

Randomize the offset values.

Rotation

Randomize the rotation values.



Scale

Randomize the scale values.

Uniform Scale

Use uniform scaling.

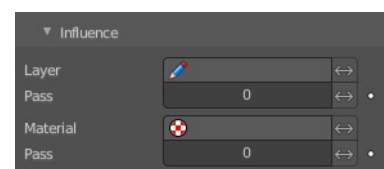
Seed

The random seed value.

Influence

Layer

Restricts the effect only to one layer or to any layers that share the same pass index. Click to pick the layer that you want to use.



Inverse Layers

Inverts the influence.

Pass

The layer pass index.

Inverse Pass

Inverts the influence.

Material

Restricts the effect only to material that share the same material or pass index. Click to pick the material that you want to use.

Invert Materials

Inverts the influence.

Pass

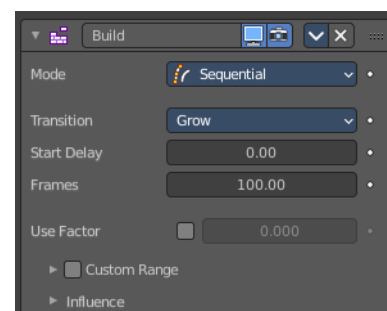
The material pass index.

Inverse Pass

Inverts the influence.

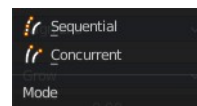
Build

The Build modifier lets the strokes of the grease pencil object appear or disappear over time when you play the animation.



Mode

How many strokes are animated at the same time.



Sequential

Strokes appear or disappear one after the other.

Concurrent

All strokes appear or disappear at once.

Time Alignment

When strokes should start to appear or disappear.



Align Start

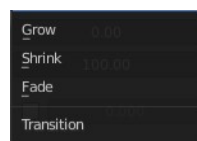
All strokes appears at the same time.

Disappear

All strokes disappears at the same time.

Transition

How the strokes are animated. The items should be self explaining.



Start delay

Number of frames after each GP keyframe before the modifier has any effect.

Frames

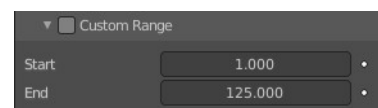
Maximum number of frames that the build effect can run.

Use Factor

Use a factor instead fixed frames. Turning on Use Factor will turn off Start Delay and Frames.

Custom Range

Only modify strokes that lies in the specified time frame.



Start

The first frame of the range.

End

The last frame of the range.

Influence

Layer

Restricts the effect only to one layer or to any layers that share the same pass index. Click to pick the layer that you want to use.



Inverse Layers

Inverts the influence.

Pass

The layer pass index.

Inverse Pass

Inverts the influence.

Dot Dash

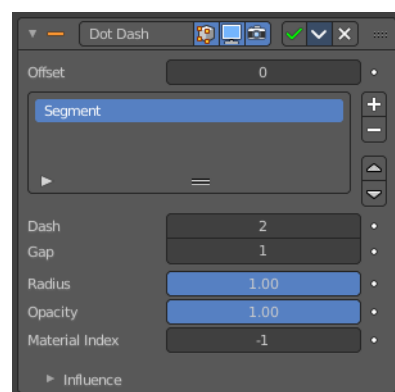
Turns a grease pencil stroke into a dotted line.

Offset

The offset into each stroke before the dot creation starts.

Segment list

Manage the single segments of the dotted dash. Segments gets repeated as they appear in the list. Means when you just have one segment in the list, then this shape will be repeated. When you have two, then the first will be displayed, then the second, then the first, and so on. Every segment can have its own settings. Which are managed below.



Add Segment

Add a new dash segment.

Remove Segment

Remove the dash segment.

Move Dash Segment up or down

Moves the selected dash segment up or down in the list.

Search element

By clicking at the triangle button you reveal a search field with which you can search through the list.



Edit Box

Type in the search term and hit enter.

Invert

Inverts the search term.

Sort by name

Sorts the list alphabetically.

Reverse

Inverts the list.

Dash

The number of points (vertices) from the original stroke to include in this segment.

Gap

The number of points (vertices) skipped after this segment.

Radius

The radius of the segment. Maximum is 1 of the original stroke.

Opacity

The visibility of this segment.

Material Index

What material to use.

Influence

Layer

Restricts the effect only to one layer or to any layers that share the same pass index. Click to pick the layer that you want to use.

Inverse Layers

Inverts the influence.

Pass

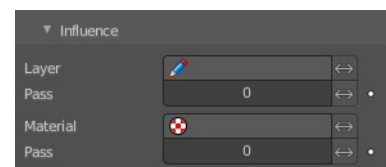
The layer pass index.

Inverse Pass

Inverts the influence.

Material

Restricts the effect only to material that share the same material or pass index. Click to pick the material that you want to use.



Invert Materials

Inverts the influence.

Pass

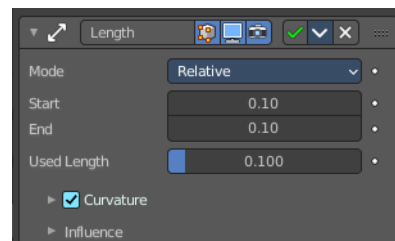
The material pass index.

Inverse Pass

Inverts the influence.

Length

The Length Modifier extends or shortens the original strokes length.



Mode

Defines the mode to use for the length calculation. Relative to the length of the grease pencil stroke, or absolute in geometry space.



Factor Start/End

Length difference for each stroke.

Used Length

What position of the stroke is used for the calculation of the extension.

Curvature subpanel

Follow the curvature of the stroke.

Point Density

Multiplied by Start/End for the total added point count.

Segment Influence

How much the length of the individual segments should influence the final computed curvature.

Filter Angle

Ignore points of the stroke that deviate from their neighbours by more than this angle.

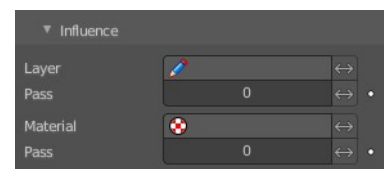
Invert

Invert the curvature of the stroke's extension.

Influence

Layer

Restricts the effect only to one layer or to any layers that share the same pass index. Click to pick the layer that you want to use.



Inverse Layers

Inverts the influence.

Pass

The layer pass index.

Inverse Pass

Inverts the influence.

Material

Restricts the effect only to material that share the same material or pass index. Click to pick the material that you want to use.

Invert Materials

Inverts the influence.

Pass

The material pass index.

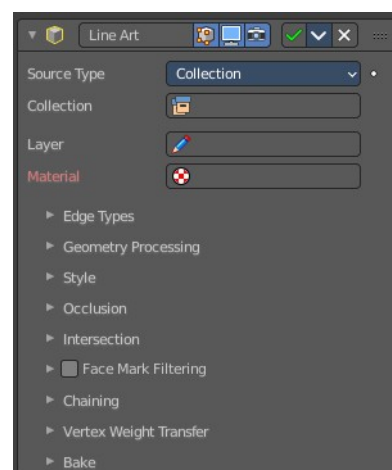
Inverse Pass

Inverts the influence.

Line Art

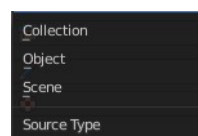
The Line Art modifier generates stylized line art from the scene or selected source collection or objects.

Note that due to lack of global cache at the moment, each Line Art modifier will run the entire occlusion calculation for itself. So if you have multiple line art modifiers to select different parts of the scene (to apply different styles, etc.), the evaluation will take much longer. There are plans to remedy this in the future, but this is a known limitation for now.



Source Type

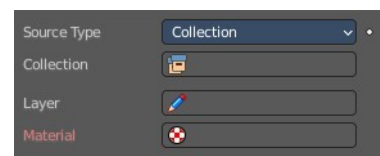
What type of geometry source should line art be generated from.



Collection

Collection

The collection where you want to apply the line art to.



Layer

Grease Pencil layer that is assigned to the generated strokes.

Material

Grease pencil material assigned to the generated strokes.

Object

Object

The object where you want to apply the line art to.



Layer

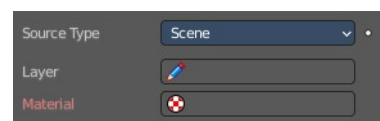
Grease Pencil layer that is assigned to the generated strokes.

Material

Grease pencil material assigned to the generated strokes.

Scene

Applies the line art grease pencil strokes to the whole scene.



Layer

Grease Pencil layer that is assigned to the generated strokes.

Material

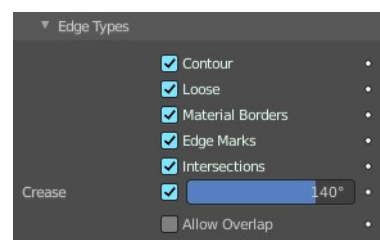
Grease pencil material assigned to the generated strokes.

Edge types subpanel

Which kind of edges to influence. The names from contour to intersections should be pretty self explaining.

Crease

Influence crease edges. The angle what edges are treaten as creases can be adjusted in the edit box.



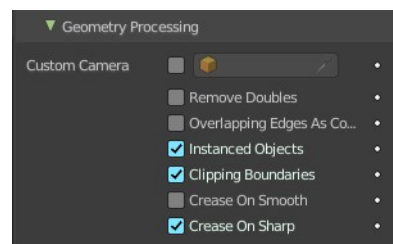
Allow Overlap

Allow an edge to have multiple overlapping types.

Geometry Processing subpanel

Custom Camera

Allows to pick a different camera than the active scene camera for line art rendering.



Remove Doubles

Perform an “merge by distance” operation when loading geometry into Line Art. The threshold of this operation is internally set to a value that is optimal for Line Art algorithm precision.

Overlapping Edges as Contour

This option allows overlapping edges (e.g. from an edge split modifier or imported geometry where two edges occupy the exact same space) to be drawn as contour. Enabling this option will slow down the calculation slightly but it will handle edge overlapping cases without erroneous occlusion results.

Instanced Objects

This option enables particles and other instanced objects to be loaded for line art calculation. There will be performance impact when there are a large amount of instanced objects in the scene.

Clipping Boundaries

When enabled, line art will generate clipping lines as contour type at the place where near or far clipping planes cut the model. Otherwise there will be no lines.

Crease on Smooth

Allow crease edges to show inside smooth surfaces.

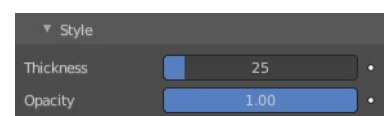
Crease on Sharp

Allow crease to show on sharp edges.

Style Subpanel

Thickness

The strokes generated by line art are given this thickness.



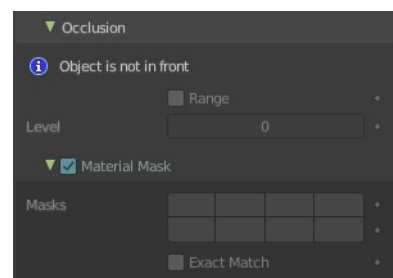
Opacity

The strokes generated by line art are given this Opacity.

Occlusion Subpanel

Range

If enabled, the modifier will select lines that have an occlusion level between



start and end values.

If not enabled just a single Level value slider shows.

Material Mask

Use material masks to filter out occluded strokes. You need to have a range level higher than 0.

Masks

Choose up to eight mask bits for the masking.

Exact match

Require matching all material masks instead of just one.

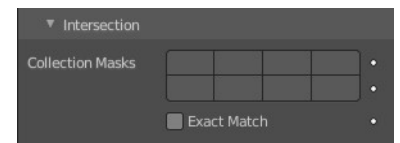
Intersection subpanel

Collection Masks

Choose up to eight mask bits for masking.

Exact match

Require matching all intersections instead of just one.



Face Mask Filtering subpanel

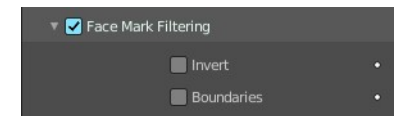
Filter Feature Lines using Freestlye Face Masks.

Invert

Invert face mask filtering.

Boundaries

Filter feature lines based on face mask boundaries.



Chaining

Chain Intersection with Contour

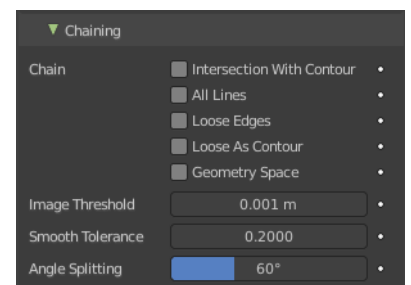
Allows intersection lines to be chained together with contour lines.

Chain All Lines

Enabling this option will cause all lines to have the type of contour and to be chained together.

Chain Loose Edges

Allow loose edges to be chained together.



Chain Loose As Contour

Loose edges will have contour type.

Chain Geometry Space

Use Geometry distance for chaining instead of image space.

Image Threshold

Segments with an image distance smaller than this value will be chained together.

Smooth tolerance

Strength of smoothing applied on jagged chains.

Angle Splitting

The angle in screen space below which a stroke is split into two.

Vertex Weight Transfer subpanel

Filter Source

If source mesh has vertex groups whose name starts with this string, then the vertex weight info will be transferred into weight groups in Grease Pencil strokes.

Invert Vertex Group

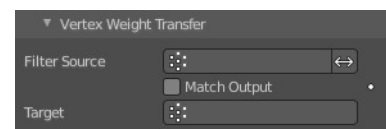
Inverts the selection.

Match Output

Transfer the filtered object vertex weights into Grease Pencil weight groups with the same names as the filtered ones.

Target

If Match Output is off, then a target vertex group has to be specified. If there are multiple weight groups copied into target, then the highest weight value is copied into it.



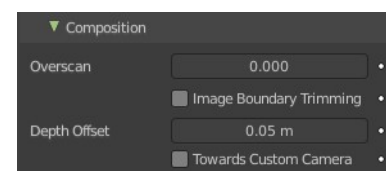
Composition

Overscan

A margin to prevent an abrupt end of the stroke at the edge of the image.

Image boundary trimming

Trim all edges right at the boundary of image (including overscan region)



Depth Offset

Move strokes slightly towards the camera to avoid clipping.

Towards custom camera

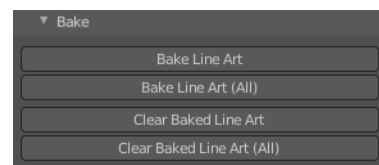
Offset strokes towards selected camera instead of the active camera.

Bake subpanel

Bake Line Art / Bake Line Art (All)

Bakes Line Art strokes for active Grease Pencil object within the start, end frame range in scene.

Bake Line Art (All) bakes all Grease Pencil objects that contains at least one Line Art modifier. After baking, baked Line Art modifier will be deactivated automatically.



Clear Baked Line Art / Clear Baked Line Art (All)

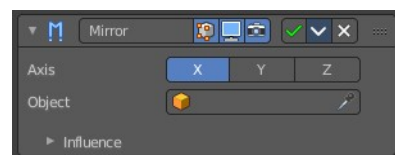
Clears baked line art frames within the scene frame range for active Grease Pencil object.

Clear Baked Line Art (All) applies the same operation for all Grease Pencil objects that contains at least one Line Art modifier.

Mirror

The Mirror modifier for the Grease Pencil Object works in Object mode. It mirrors the object along its local X, Y and/or Z axes, across the Object Origin.

It can also use another object as the mirror center, then use that object's local axes instead of its own.



Object

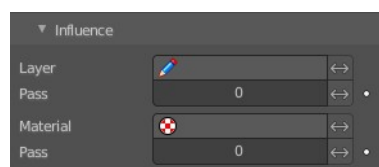
Define an object to mirror at its origin instead of mirroring along the grease pencil origin.

You can animate it to move the mirror axis.

Influence

Layer

Restricts the effect only to one layer or to any layers that share the same pass index. Click to pick the layer that you want to use.



Invert

Inverts the influence.

Pass

The layer pass index.

Invert

Inverts the influence.

Material

Restricts the effect only to material that share the same material or pass index. Click to pick the material that you want to use.

Invert

Inverts the influence.

Pass

The material pass index.

Invert

Inverts the influence.

Multiple Strokes

Adds multiple parallel copies of the stroke around the original stroke.

Duplicates

The number of additional strokes.

Distance

Distance between the original and the duplicate strokes.

Offset

Control the offset position (inner or outer) for duplicate strokes.

Fade

Fade out duplicate strokes, using their opacity or thickness.

Center

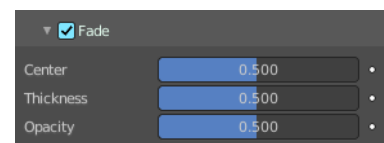
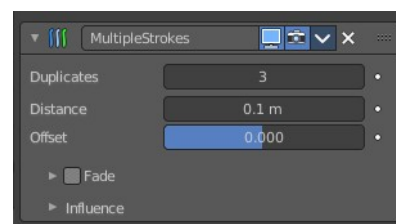
Control the initial position for the fading.

Thickness

Fade influence on strokes thickness.

Opacity

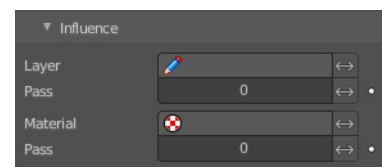
Fade influence on strokes opacity.



Influence

Layer

Restricts the effect only to one layer or to any layers that share the same pass index. Click to pick the layer that you want to use.



Invert

Inverts the influence.

Pass

The layer pass index.

Invert

Inverts the influence.

Material

Restricts the effect only to material that share the same material or pass index. Click to pick the material that you want to use.

Invert

Inverts the influence.

Pass

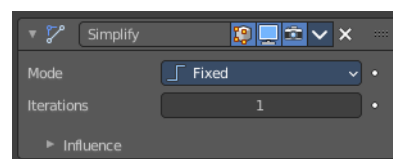
The material pass index.

Invert

Inverts the influence.

Simplify

The Simplify modifier allows you to reduce the amount of points in the strokes. It tries to reduce points while maintaining the lines shape.



Mode

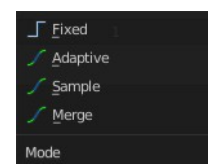
How to reduce points in the strokes.

Fixed

Deletes alternated points in the strokes, except the start and end points.

Adaptive

Uses the RDP algorithm (Ramer-Douglas-Peucker algorithm) for points deletion. The algorithm try to obtain a similar line shape with fewer points.



Sample

Recreates the stroke geometry with a predefined length between points.

Merge

Simplifies the strokes by merging points that are closer than a specified distance to each other.

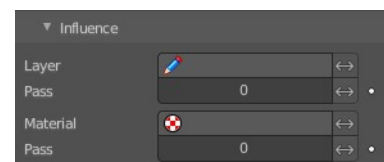
Iterations

Number of times to repeat the procedure.

Influence

Layer

Restricts the effect only to one layer or to any layers that share the same pass index. Click to pick the layer that you want to use.



Invert

Inverts the influence.

Pass

The layer pass index.

Invert

Inverts the influence.

Material

Restricts the effect only to material that share the same material or pass index. Click to pick the material that you want to use.

Invert

Inverts the influence.

Pass

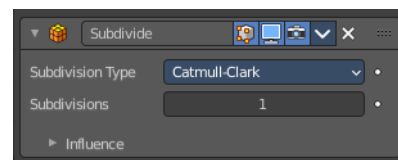
The material pass index.

Invert

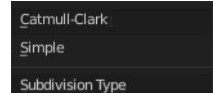
Inverts the influence.

Subdivide

The Subdivide modifier subdivide the strokes by inserting points between other points to the lines.



Subdivision Type



Catmull-Clark
Simple
Subdivision Type

Catmull-Clark

Subdivides and smooths the surfaces.

Simple

Only subdivides the surfaces, without any smoothing.

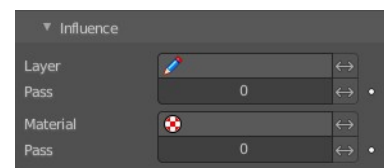
Subdivisions

Number of subdivisions.

Influence

Layer

Restricts the effect only to one layer or to any layers that share the same pass index. Click to pick the layer that you want to use.



Invert

Inverts the influence.

Pass

The layer pass index.

Invert

Inverts the influence.

Material

Restricts the effect only to material that share the same material or pass index. Click to pick the material that you want to use.

Invert

Inverts the influence.

Pass

The material pass index.

Invert

Inverts the influence.