



13.1.6 Editors - Shader Editor - Header - Add Menu - Input

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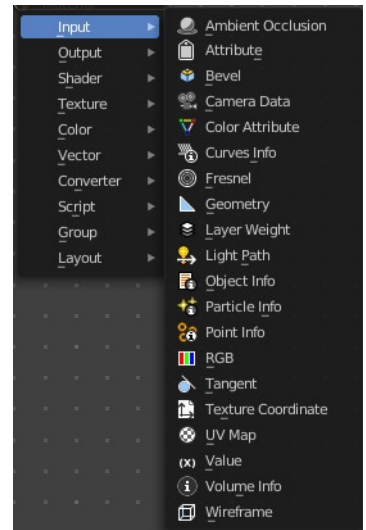
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Add menu - Input

The Input menu contains Input node types.

The content is the same for all three sub modes. Note that you need to tick Use Nodes to activate the menu items when you are in Line Style sub mode.



Ambient Occlusion

Ambient Occlusion is a technique to self shadow the geometry of objects. Corners are usually darker than flat areas.

Hint, you should either use Ambient Occlusion or Global Illumination, since GI includes AO techniques.



Inputs

Color

Tint for AO output color.

Distance Cycles Only

Distance up to which other objects are considered to occlude the shading point.

Normal

Normal used for ambient occlusion. If nothing is connected the default shading normal is used.

Properties

Samples Cycles Only

Number of samples to use for ray traced ambient occlusion sampling. Keep as low as possible for an optimal performance.

Inside Cycles Only

Detect convex rather than concave shapes, by computing occlusion inside mesh.

Only Local Cycles Only

Only detect occlusion from the object itself, and not others.

Outputs

Color

Ambient occlusion with color tint.

AO

Ambient occlusion factor without color tint.

Attribute

The Attribute node allows you to retrieve attributes attached to an object or mesh.

Properties

Name

Name of the attribute that you want to use.

Most attributes are easily available. Some not. Examples of not so obvious ones:

Vertex Color Layers can be retrieved this by their names.

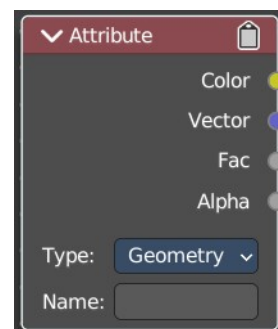
Density gives a scalar defining the density of any smoke inside the Fluid Domain.

Color gives the color of the smoke inside the Fluid Domain. The color and vector outputs are the same. The Factor output is an average of the channels.

Temperature gives a scalar defining the temperature of the volume. Values in the range 0 - 1 map to 0 - 1000 kelvin. This may be used to render physically-based fire with the Blackbody or Principled Volume shaders. All three outputs are the same.

Flame gives a scalar defining the density of any fire inside the Fluid Domain. All three outputs are the same.

Ocean Foam gives a scalar defining where foam might appear when using an Ocean Modifier. This depends on the name you give this property.



Outputs

Color

RGB color interpolated from the attribute.

Vector

XYZ vector interpolated from the attribute.

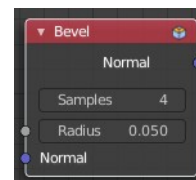
Factor

Scalar value interpolated from the attribute.

Bevel

Cycles Only

The Bevel shader node can be used for rendering rounded corners to capture specular highlights. The geometry is not modified. The modification happens at shader level.



Inputs

Radius

Width of the bevel effect on edges.

Normal

Normal to apply bevel on top of, to be combined with a Bump node for example.

Properties

Samples

Number of samples to take for each shader evaluation. More samples give more accurate results, but are also slower to render. The default value of 4 works well for most cases, with any noise resolved by using more AA samples.

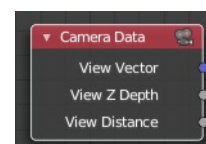
Outputs

Normal

Standard normal output.

Camera Data

With the Camera Data node you can get information about the position of the object relative to the camera. This could be used for example to change the shading of objects further away from the camera, or make custom fog effects.



Inputs

This node has no inputs.

Properties

This node has no properties.

Outputs

View Vector

A camera space vector from the camera to the shading point.

View Z Depth

The distance each pixel is away from the camera.

View Distance

Distance from the camera to the shading point.

Fresnel

The Fresnel effect says that the more a face goes towards 180 degrees, the more it is reflecting. With 180 degrees every object in real life is 100% reflective, no matter how the material is.



Inputs

IOR

Index of refraction (IOR) of the material being entered.

Normal

Input meant for plugging in bump or normal maps which will affect the output.

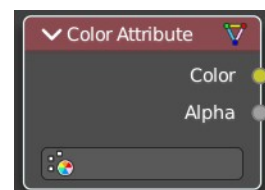
Outputs

Factor

Fresnel weight, indicating the probability with which light will reflect off the layer rather than passing through.

Color Attribute

Provides vertex colors as well as their alpha value.



Properties

Vertex Color

The target vertex color. The listed vertex colors are those of the mesh of the active object.

If the active object has no mesh, a warning will be displayed. If the property is marked in red, it means the vertex color is not available in the mesh of the active object, but it may be available in other meshes of objects that share this material.

Outputs

Color

The vertex color.

Alpha

The alpha value.

Geometry

The Geometry node gives geometric information about the current shading point. All vector coordinates are in World Space. For volume shaders, only the position and incoming vector are available.

Outputs

Position

Position of the shading point.

Normal

Shading normal at the surface (includes smooth normals and bump mapping).

Tangent

Tangent at the surface.

True Normal

Geometry or flat normal of the surface.

Incoming

Vector pointing towards the point the shading point is being viewed from.

Parametric

Parametric coordinates of the shading point on the surface. To area lights it outputs its UV coordinates in planar mapping and in spherical coordinates to point lights.

Backfacing

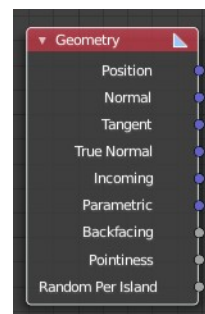
1.0 if the face is being viewed from the back side, 0.0 for the front side.

Pointiness Cycles Only

An approximation of the curvature of the mesh per vertex. Lighter values indicate convex angles, darker values indicate concave angles. It allows you to do effects like dirt maps and wear-off effects.

Random Per Island Cycles Only

A random value for each connected component (island) of the mesh. It is useful to add variations to meshes composed of separated units like tree leaves, wood planks, or curves of multiple splines.



Curves Info

The Hair Info node gives access to Hair information.

Outputs

Is Strand

Returns 1 when the shader is acting on a strand, otherwise 0.

Intercept

The point along the strand where the ray hits the strand (1 at the tip and 0 at the root).

Length

Returns the length of the hair curve.

Thickness

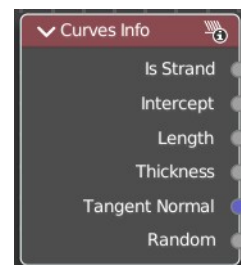
The thickness of the strand at the point where the ray hits the strand.

Tangent Normal

Tangent normal of the strand.

Random

A random per-hair value in the range from 0 to 1. It can for example be used in combination with a color ramp, to randomize the hair color.



Layer Weight

The Layer Weight node outputs a weight typically used for layering shaders with the Mix Shader node.

Inputs

Blend

Bias the output towards all 0 or all 1. Useful for uneven mixing of shaders.

Normal

Input meant for plugging in bump or normal maps which will affect the output.

Outputs

Fresnel

Dielectric Fresnel weight, useful for example for layering diffuse and glossy shaders to create a plastic material. This is like the Fresnel node, except that the input of this node is in the often more convenient 0.0 to 1.0 range.



Facing

Weight that blends from the first to the second shader as the surface goes from facing the viewer to viewing it at a grazing angle.

Light Path

The Light Path node is used to find out for which kind of incoming ray the shader is being executed. This is useful for non-physically-based tricks.

Outputs

Is Camera Ray

1.0 if shading is executed for a camera ray, 0.0 otherwise.

Is Shadow Ray

1.0 if shading is executed for a shadow ray, 0.0 otherwise.

Is Diffuse Ray

1.0 if shading is executed for a diffuse ray, 0.0 otherwise.

Is Glossy Ray

1.0 if shading is executed for a glossy ray, 0.0 otherwise.

Is Singular Ray Cycles Only

1.0 if shading is executed for a singular ray, 0.0 otherwise.

Is Reflection Ray Cycles Only

1.0 if shading is executed for a reflection ray, 0.0 otherwise.

Is Transmission Ray Cycles Only

1.0 if shading is executed for a transmission ray, 0.0 otherwise.

Ray Length Cycles Only

Distance traveled by the light ray from the last bounce or camera.

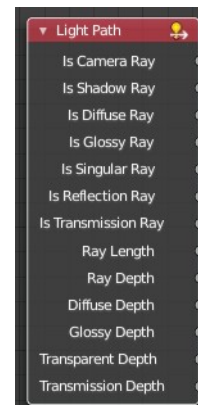
Ray Depth

Number of times the ray been reflected or transmitted on interaction with a surface.

Note. Passing through a transparent shader does not count as a normal “bounce”.

Diffuse Depth Cycles Only

Number of times the ray has gone through diffuse reflection or transmission.



Glossy Depth Cycles Only

Number of times the ray has gone through glossy reflection or transmission.

Transparent Depth Cycles Only

Returns the number of transparent surfaces passed through.

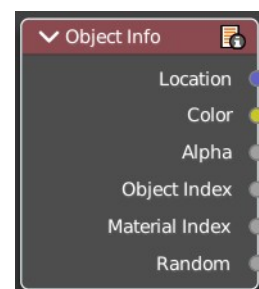
Transmission Depth Cycles Only

Replace a Transmission light path after X bounces with another shader, e.g. a Diffuse one. This can be used to avoid black surfaces, due to low amount of max bounces.

Object Info

The Object Info node gives information about the object instance.

Note that this node only works for material shading nodes; it does nothing for light and world shading nodes.



Outputs

Location

Location of the object in world space.

Color

Object color, same as Color in the Properties Editor > Object > Viewport Display.

Alpha

Alpha color for the Object Color, if existing.

Object Index

Object pass index, same as Pass Index in the Properties Editor > Object > Relations.

Material Index

Material pass index, same as Pass Index in the Properties Editor > Material > Settings.

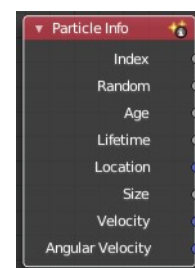
Random

Random number unique to a single object instance.

Particle Info

Cycles Only

This node gives access to the data of the particle that spawned the object instance.



Note that this node currently only supports parent particles. Info from child particles is not available.

Outputs

Index

Index number of the particle (from 0 to number of particles).

Random

A random per-particle value in the range from 0 to 1. It can for example be used in combination with a color ramp, to randomize the particle color.

Age

Age of the particle in frames.

Lifetime

Total lifespan of the particle in frames.

Location

Location of the particle.

Size

Size of the particle.

Velocity

Velocity of the particle.

Angular Velocity

Angular velocity of the particle.

Point Info

Retrieve info from a point cloud. Just cycles. Eevee is not yet supported.

Outputs

Position

The position of the point cloud.

Radius

The radius of the point cloud.

Random

A random point in the point cloud.



RGB

Set a color.

Properties

The RGB node uses the color picker widget.



Outputs

Color / RGBA

A single RGBA color value.

Tangent

The Tangent node generates a tangent direction for the Anisotropic BSDF.

Properties

Direction Type

The tangent direction can be derived from a cylindrical projection around the X, Y, or Z axis (radial), or from a manually created UV Map for full control.



Outputs

Tangent

The tangent direction vector.

Texture Coordinate

Define some texture coordinate types. The types are pretty self explaining.

Properties

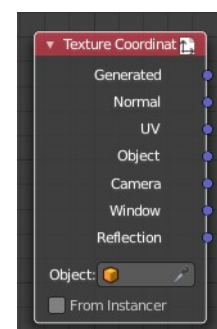
Object

Specific object to use for object space coordinates. This only affects the Object output.

From Instancer

Cycles Only!

If the object is generated by instancing from vertices or faces, use texture coordinates from instancer. This only affects the Generated and UV outputs.



Output

Generated

Uses automatically generated texture coordinates, calculated from the bounding box.

Normal

Uses the normals for the texture coordinates.

UV

Uses the UV mapping for the texture coordinates.

Object

Uses the Object for the texture coordinates.

Camera

Uses the position coordinate in camera space for texture coordinates.

Window

Uses the location of shading point on the screen.

Reflection

Uses the direction of the reflection vector as texture coordinates.

UV Along Stroke

Line Style Mode Only

The UV Along Stroke input node maps textures along the stroke length, making it possible to mimic pencil, paintbrush, and other art medium marks.

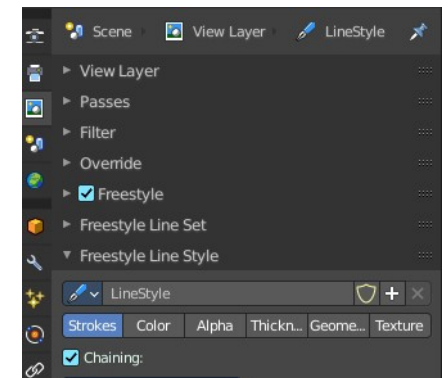
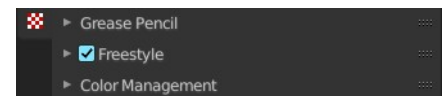
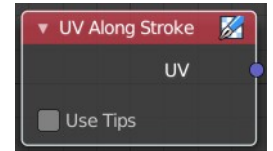
The pattern type can be set up in the properties editor in the Freestyle Line Style panel in the View Layer Properties tab. Don't forget to turn on Line Style in the Render Properties first. Or the Freestyle panels will not show.

Note! These UV maps become available only during the Freestyle rendering process. This means that the UV Along Stroke node cannot be replaced by the conventional UV Map input node. Since it takes an existing UV map already defined as part of mesh data.

Properties

Use Tips

Allows to use lower quarters of a texture image for the head and tail tips of a stroke, while the upper half for the stroke body.



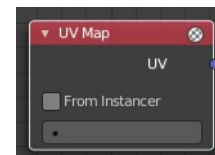
Outputs

UV

UV maps defined along strokes.

UV Map

The UV Map node is used to retrieve specific UV maps. This node can retrieve any UV map that belongs to the object with this material.



Properties

From Instancer Cycles Only

See the From Instancer option of the Texture Coordinate Node.

UV Map edit box

UV map to use.

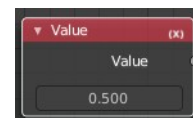
Outputs

UV

UV mapping coordinates from the specified UV map.

Value

The Value Node is a simple node to input numerical values to other nodes in the tree.



Properties

Default Value

Type in a single numerical value (floating point).

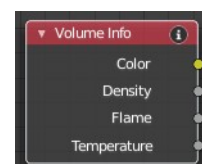
Outputs

Value

The value set in the options.

Volume Info

The Volume Info node provides information about Smoke Domains.



Outputs

Color

Smoke color.

Density

Smoke density.

Flame

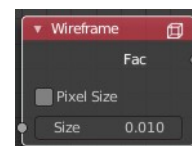
Fire density.

Temperature

Temperature of the fire. Values in the range [0, 1] linearly maps to temperatures in the range [0, 1000] in Kelvin.

Wireframe

The Wireframe node is used to retrieve and render the wireframe of the object. This happens as the edges of the object appears to Cycles.



Meshes are triangulated before being processed by Cycles. So the topology will always appear triangulated when viewed with the Wire frame node.

Inputs

Size

The input value used for unconnected socket.

Properties

Pixel Size

When enabled, the size of edge lines is set in screen space.

Outputs

Factor

Black-and-white mask showing white lines representing edges according to the object's topology.