

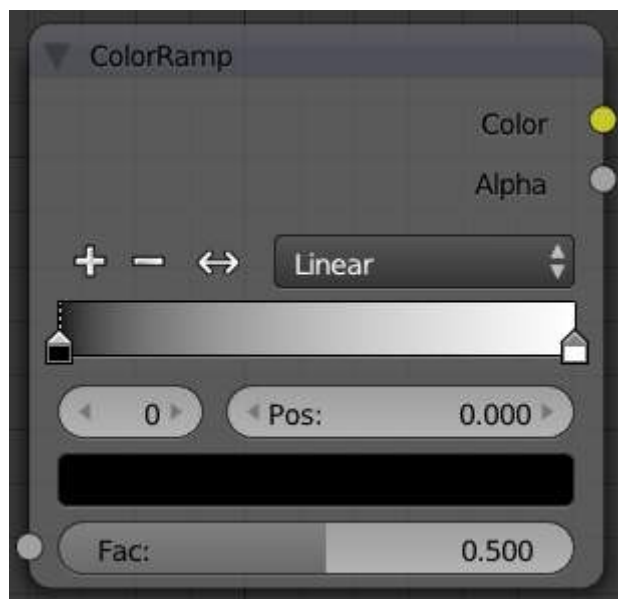
10.2.1.5.3 Render - Blender Render Engine - Materials - Material Nodes - Convertor Nodes

Convertor Nodes.....	1
ColorRamp Node.....	2
Inputs.....	2
Outputs.....	2
Controls.....	2
RGB to BW Node.....	4
Inputs.....	4
Outputs.....	4
Math Node.....	4
Inputs.....	5
Outputs.....	5
Controls.....	5
Vector Math Node.....	6
Inputs.....	6
Outputs.....	6
Controls.....	6
Squeeze Value Node.....	7
Inputs.....	7
Outputs.....	7
Separate RGB Node.....	8
Inputs.....	8
Outputs.....	8
Combine RGB Node.....	8
Inputs.....	8
Outputs.....	9
Separate HSV Node.....	9
Inputs.....	9
Outputs.....	9
Combine HSV Node.....	10
Inputs.....	10
Outputs.....	10

Convertor Nodes

As the name implies, these nodes convert the colors in the material in some way.

ColorRamp Node



ColorRamp node

The ColorRamp Node is used for mapping values to colors with the use of a gradient. It works exactly the same way as a *Colorband for textures and materials*, using the Factor value as a slider or index to the color ramp shown, and outputting a color value and an alpha value from the output sockets.

By default, the ColorRamp is added to the node map with two colors at opposite ends of the spectrum. A completely black black is on the left (Black as shown in the swatch with an Alpha value of 1.00) and a whitewash white is on the right.

To select a color, LMB click on the thin vertical line/band within the colorband. The example picture shows the black color selected, as it is highlighted white. The settings for the color are shown above the colorband as (left to right): color swatch, Alpha setting, and interpolation type.

Inputs

Fac:

Factor. The degree of node's influence in node tree. The value can be provided by another node or set manually.

Outputs

Color

Value of the color, combined by the node.

Alpha

Value of the alpha, combined by the node.

Controls



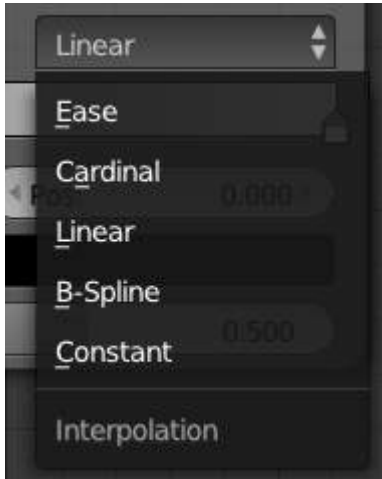
Add a new mark to the center of the colorband with the default color (neutral gray).



Remove the currently selected mark from the colorband.



Flip the colorband.



Modes of interpolation between marker's values color ramp

Interpolation

Various modes of interpolation between marker's values can be chosen in the Interpolation menu:

Ease

Ease by quadratic equation.

Cardinal

Cardinal.

Linear

Linear (default). A smooth, consistent transition between colors.

B-Spline

B-Spline.

Constant

Constant.



Colorband

Colorband

Contain a gradient through a sequence of many colors (with alpha), each color acting across a certain position in the spectrum.



The number of the active mark.



Pos. The position of the active color mark in the colorband (range 0.0–1.0). The position of the color marks can also be changed by LMB dragging them in the colorband.



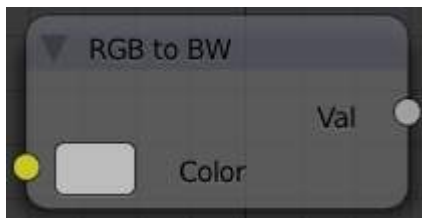
Color swatch to color selection for a mark

Color Selector

Allows set color and alpha values for each marker.

See more details about node controls' functions *here*.

RGB to BW Node



RGB to BW node

This node converts a color image to black-and-white.

Inputs

Color:

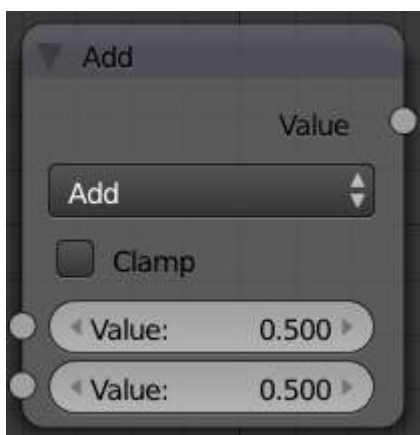
Input color value. Includes a color swatch, allowing you to select the color directly on the node.

Outputs

Value

Black-and-white value of the input color, converted by the node.

Math Node



Math node

This node performs the selected math operation on an image or buffer. All common math functions are supported. If only an image is fed to one Value socket, the math function will apply the other Value consistently to every pixel in producing the output Value. Select the math function by clicking the up-down selector where the “Add” selection is shown.

Inputs

Value

Input value 1 (upper). The value can be provided by another node or set manually.

Value

Input value 2 (lower). The value can be provided by another node or set manually.

Outputs

Value

Output value, converted by the node.

Controls

Clamp

Clamps the result between 0 and 1.

Operation

Selector the math function for conversion.

Add

Add the two inputs

Subtract

Subtract input 2 from input 1

Multiply

Multiply the two inputs

Divide

Divide input 1 by input 2

Sine

The sine of input 1 (degrees)

Cosine

The cosine of input 1 (degrees)

Tangent

The tangent of input 1 (degrees)

Arcsine

The arcsine (inverse sine) of input 1 (degrees)

Arccosine

The arccosine (inverse cosine) of input 1 (degrees)

Arctangent

The arctangent (inverse tangent) of input 1 (degrees)

Power

Input 1 to the power of input 2 ($\text{input1}^{\text{input2}}$)

Logarithm

Log base input 2 of input 1

Minimum

The minimum of input 1 and input 2

Maximum

The maximum of input 1 and input 2

Round

Rounds input 1 to the nearest integer

Less Than

Test if input 1 is less than input 2, returns 1 for true, 0 for false

Greater Than

Test if input 1 is greater than input 2, returns 1 for true, 0 for false

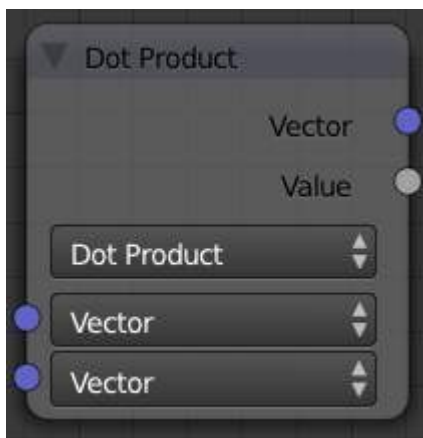
Modulo

Division of input 1 by input 2 with remainder.

Absolute

Always return non-negative value from any operation input 2 between input 1.

Vector Math Node



Vector Math node

This node performs the selected math operation on vectors. Select the math function by clicking the up-down selector where the “Add” selection is shown.

Inputs

Vector

Input vector 1 (upper). The value can be provided by another node or set manually.

Vector

Input vector 2 (lower). The value can be provided by another node or set manually.

Outputs

Vector

Output vector, converted by the node.

Value

Output value, converted by the node.

Controls

Operation

Selector the math function for conversion.

Add

Adding input 1 and 2.

Subtract

Subtracting input 1 and 2.

Average

Averaging input 1 and 2.

Dot Product

Algebraic operation that takes two equal-length sequences of vectors 1 and 2 and returns a single number. Result - scalar.

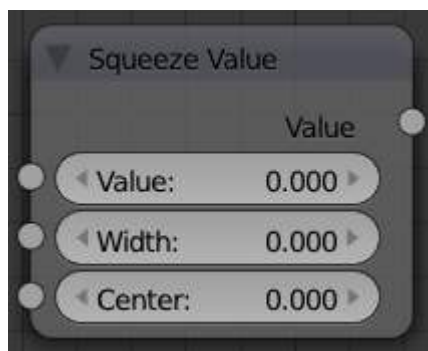
Cross Product

Geometric binary operation on two vectors 1 and 2 in three-dimensional space. It results in a vector which is perpendicular to both and therefore normal to the plane containing them. Result - vector.

Normalize

Normalizing input 1 and 2.

Squeeze Value Node



Squeeze Value node

This node is used primarily in conjunction with the Camera Data node used. The camera data generate large output values, both in terms of the depth information as well as the extent in the width. With the squeeze Node high output values to an acceptable material for the node degree, ie to values between 0.0 - 1.0 scaled down.

Inputs

Value

Any numeric value. The value can be provided by another node or set manually.

Width

Determines the curve between sharp S-shaped (width = 1) and stretched (Width = 0.1). Negative values reverse the course. The value can be provided by another node or set manually.

Center

The center of the output value range. This input value is replaced by the output value of 0.5. The value can be provided by another node or set manually.

Outputs

Value

A value between 0 and 1, converted by the node.

Separate RGB Node



Separate RGB node

This node separates an image into its red, green and blue channels. The colors are then converted to intensity, which returns a greyscale to the output. For example, if you have an image with pure green, then the red and blue outputs will be black and the green output will be completely white. Mixed colors will return mixed values according to their RGB intensity.

Inputs

Image

Input color value. Includes a color swatch, allowing you to select the color directly on the node.

Outputs

R

Value of the red color channel, separated out by the node.

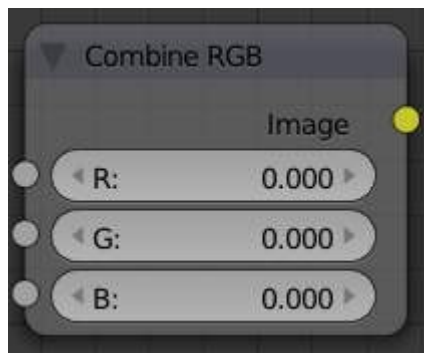
G

Value of the green color channel, separated out by the node.

B

Value of the blue color channel, separated out by the node.

Combine RGB Node



Combine RGB node

This node combines a color (image) from separated red, green, blue channels.

Inputs

R

- R** Input value of red color channel. The value can be provided by another node or set manually.
- G** Input value of green color channel. The value can be provided by another node or set manually.
- B** Input value of blue color channel. The value can be provided by another node or set manually.

Outputs

Image

Output value of the color, combined by the node.

Separate HSV Node



Separate HSV node

This node separates an image into image maps for the hue, saturation, value channels. Three values, often considered as more intuitive than the RGB system (nearly only used on computers)

Use and manipulate the separated channels for different purposes; i.e. to achieve some compositing/color adjustment result. For example, you could expand the Value channel (by using the multiply node) to make all the colors brighter. You could make an image more relaxed by diminishing (via the divide or map value node) the Saturation channel. You could isolate a specific range of colors (by clipping the Hue channel via the Colorramp node) and change their color (by the Add/Subtract mix node).

Inputs

Color

Input color value. Includes a color swatch, allowing you to select the color directly on the node.

Outputs

H

Value of the **hue** color channel, separated out by the node (choose a color of the rainbow).

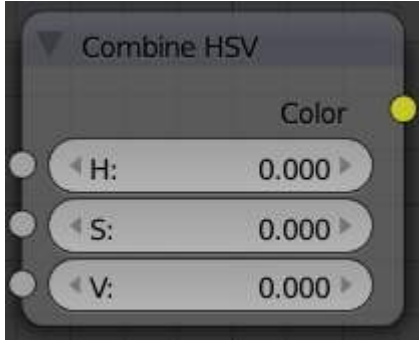
S

Value of the saturation color channel, separated out by the node (the *quantity* of hue in the color (from desaturate - shade of gray - to saturate - brighter colors)).

V

Value of the value color channel, separated out by the node (the **luminosity** of the color (from 'no light' - black - to 'full light' - 'full' color, or white if Saturation is 0.0)).

Combine HSV Node



Combine HSV node

This node combines a color from separated hue, saturation, value color channels.

Inputs

H

Input value of hue color channel. The value can be provided by another node or set manually.

S

Input value of saturation color channel. The value can be provided by another node or set manually.

V

Input value of value color channel. The value can be provided by another node or set manually.

Outputs

Color

Output value of the color, combined by the node.