PxrNormalMap

Produces a bumped normal from a normal map (a color map encoding the normal). Bumps are applied in *object* space. The change in scale between *object* space and *current* space is automatically applied by the node.

Like the other texture nodes, this node takes a manifold which describes either a 2D or 3D domain to apply a the texture to. The default behavior if no manifold is attached, is to apply over the s,t domain defined on the geometry.

Texture atlas format files can be read in either UDIM (Mari) format or mudbox format.

Input Parameters

Bump Scale

Scale the bump effect. Typical range is from 0.0 to 2.0.

Input Normal

Specifies normal map color (this parameter is ignored if *Filename* is provided).

Filename

Normal map filename. The shader reads only one channel of the file from the Mapping Controls' *Channel* specified below. Note that this will be read in as the Mudbox normal map format in tangent space.

Bump Overlay

Connect a PxrBump or PxrNormalMap node here if you need to combine multiple patterns.

Bump Orientation

Invert Bump

Invert the bump orientation. Concave becomes convex and vice versa.

Orientation

Some texturing applications offer different orientations, like OpenGL or DirectX. You can also go manual (choose "Custom") to try to fix your normal map's appearance.

Flip X

Flips the x axis (red channel) of the normal map. There isn't any standard to encode normal maps and every application will encode them differently. This switch, combined with *Flip Y* and *Invert Bump* will allow you to set the correct orientation.

> ⓘ This switch is only visible when **Orientation** is set to "`Custom`".

Flip Y

Flips the y axis (green channel) of the normal map. There isn't any standard to encode normal maps and every application will encode them differently. This switch, combined with *Flip X* and *Invert Bump* will allow you to set the correct orientation.

> ⓘ This switch is only visible when **Orientation** is set to "`Custom`".

Mapping Controls

Channel

Offsets the first channel to be looked up for filename.

Atlas Style

Specifies the style of texture atlas that is being used. If you specify an atlas style, the Filename parameter must contain a `_MAPID_`, which will be substituted automatically according to the surface parameterization and the style of atlas. Valid styles are:

- 0: None
- 1: MARI
- 2: Mudbox

Invert T

Inverts the t texture coordinate for texture lookup.

Blur

Specifies how much to blur the result from the texture file.

Mip Interpolate

Selects whether to interpolate between adjacent resolutions in the multi-resolution texture, resulting in smoother transitions between levels.

Filter

Selects different reconstruction filters that can be used during texture lookup. The filters available for PxrNormalMap are:

- 1: Box
- 2: Bilinear
- 3: Bspline
- 6: Gaussian
- 7: Lagrangian

Manifold

Provides the range over which to apply the texture. Defaults to s,t.

Advanced

Reverse Normal

Reverse the resulting normal.

Disabled

Use the geometric normal (ignore the modified normal).

MipBias

Bias mip selection chosen for rendering to either a higher (negative integers) or lower resolution (positive integers) selection.

MaxResolution

Clamp mip selection to a preferred maximum level. This may prevent the highest resolutions from being rendered depending on your selection.

OptimizeIndirect

Sets texture filter to Box (inexpensive) on indirect hits instead of the selected filter used for other visible effects.

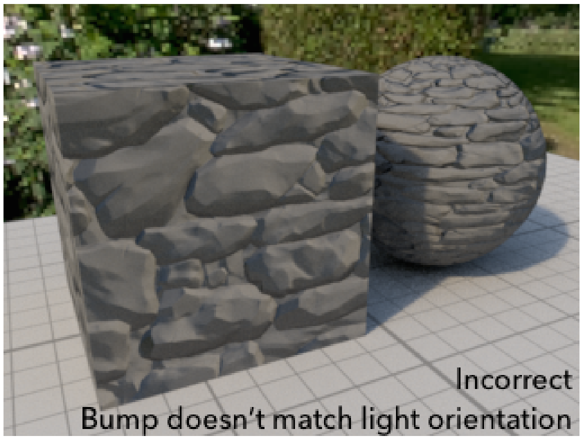
Output Parameters

resultN

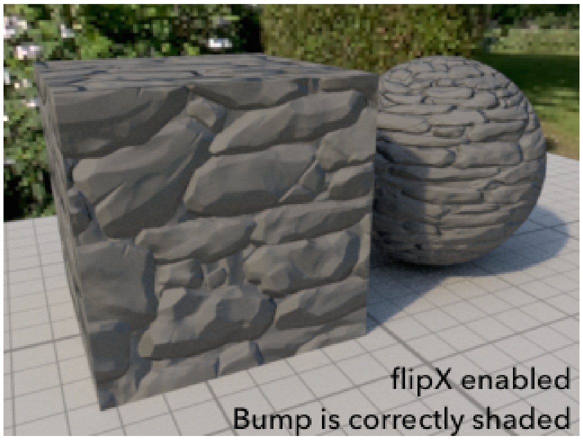
The bumped normal.

Normal Maps Orientation

Sometimes you might apply a normal map to your geometry and it will look wrong. Generally, it's an orientation problem and you will have to find the correct combination of *Invert Bump*, *Flip X*, and *Flip Y*. The best method is to start an IPR/LiveRender session and try various combinations. Once you have found the correct combination for your authoring application (ZBrush, Mudbox, 3DCoat, etc), it should be good for all maps exported from that application with the same settings.



Incorrect
Bump doesn't match light orientation



flipX enabled
Bump is correctly shaded