

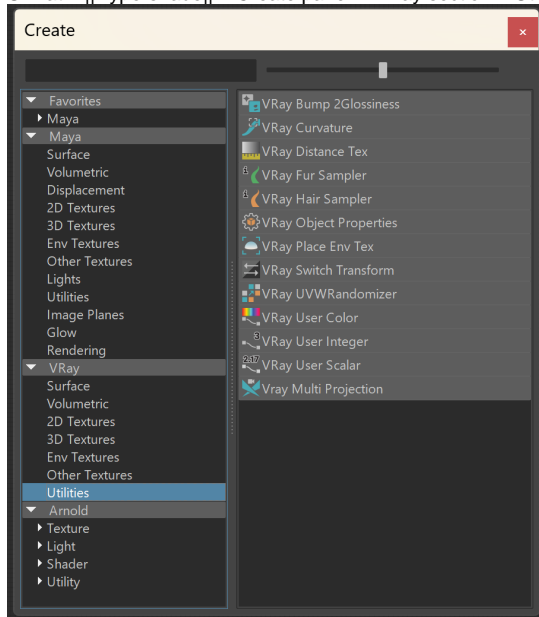
# VRayCurvature

This page provides information on the V-Ray Curvature Map.

## Overview

VRayCurvature is a texture that will effectively sample the underlying mesh for curves. A region around each shaded point gets sampled with additional rays (similar to [VRayDirt](#)) and all additional normals are averaged to get a smooth normal at the original point. This normal is used to compute the color, which depends on the **Mode** of the map. The parameters should be adjusted by trial and error since they generally depend on the scale used, hence the defaults might not be appropriate at all in some cases.

UI Path: `||Hypershade|| > Create panel > VRay section > Utilities > VRay Curvature`



## Parameters

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**Mode** – Switch between respective modes.

**Legacy** – Does not distinguish if the mesh is curving outward (convex) or inward (concave) but instead takes into account only the amount of overall curvature.

**Convex** – Generates a grayscale based on the mesh's outward curve.

**Concave** – Generates a grayscale based on the mesh's inward curve.

**Both** – Generates a red-green gradient based on both the mesh's convex and concave. Red corresponds to the mesh's convex and green corresponds to the mesh's concave.

**Subdivs** – Controls the number of samples around each shaded point.

**Sample Spread** – Controls the radius of the sampled region.

**Ignore Bump** – When enabled, excludes Bump maps from V-RayCurvature computations.

**Min Output Color** – Specifies the minimum output color value for the most concave area (the dents in the mesh). Default value is 0 - completely black.

**Max Output Color** – Specifies the maximum output color value for the most convex area (the peaks in the mesh). Default value is 1 - white.

**Output Color Gain** – Multiplies the output values.

**Output Color Lift** – Uniformly lightens the output values.

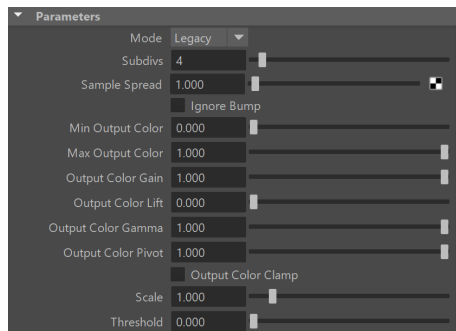
**Output Color Gamma** – Applies gamma correction to the output values.

**Output Color Pivot** – Pivots the value to the gamma correction (output values equal to the pivot value are left unchanged).

**Output Color Clamp** – When enabled clamps the **Min Output color** and **Max Output color** values in [0,1] range (negative values are output as 0 and values above 1 are being output as 1)

**Scale** – Factor determining the scale that the curvature traces. Can be used to match curvature between big and small objects.

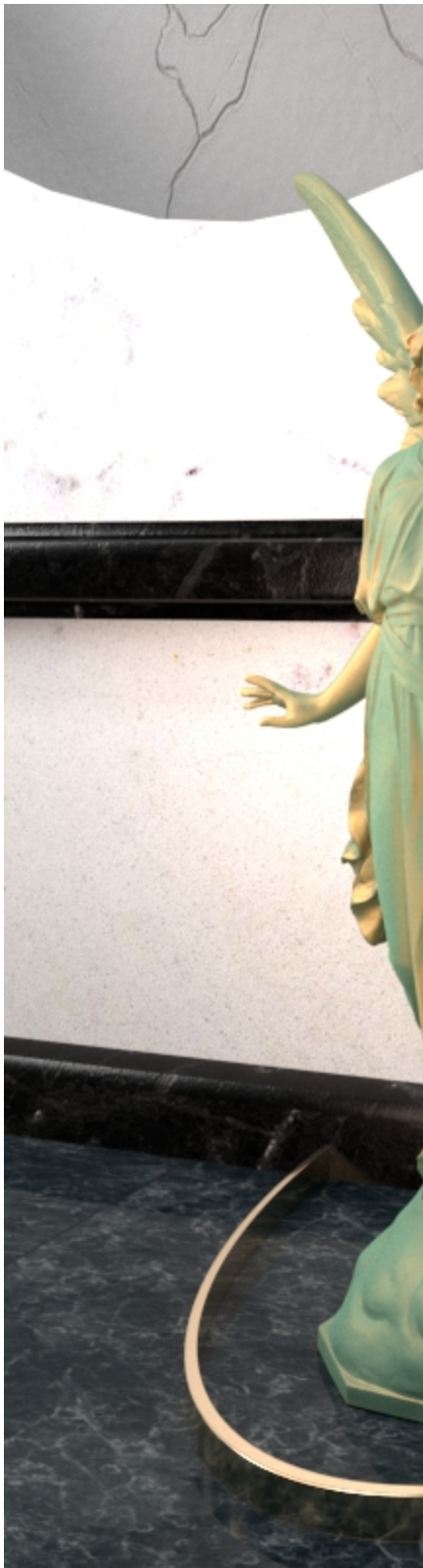
**Threshold** – Controls the amount of the sampled area.



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## Example: Curvature Modes

**V-Ray Blend** material (with mixed Copper and Patina materials) is applied to the geometry. **V-Ray Curvature** map is used as the blend amount for the Coat material. In the **Convex** and **Concave** examples, the **Threshold** is set to **0.300**. All other parameters are left at their default values. In the **Legacy** example, as well as the **Threshold** adjustment, the **Output Color Lift** is set to **0.100** and the **Sample Spread** is assigned a value of **1.500**. All other parameters are left at their default states. See the [Both Mode note](#) for information on how to set up that mode.



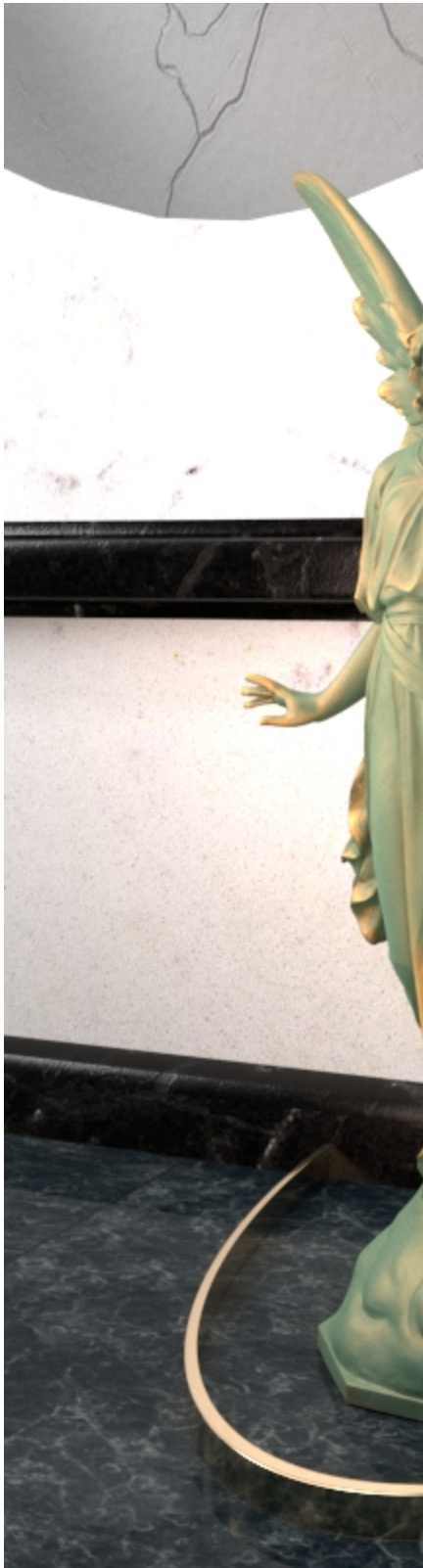
Legacy



Convex



Concave

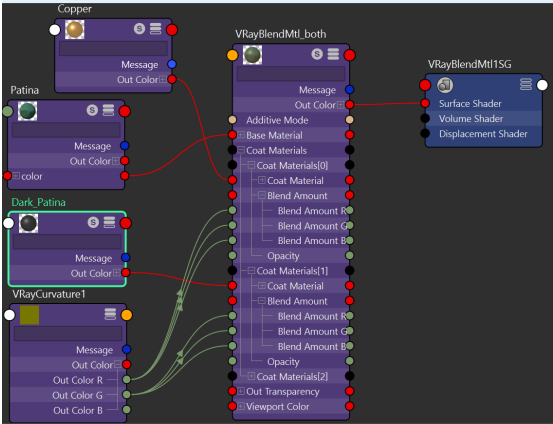


Both



**Both mode** outputs a red and green color gradient instead of a black and white one. Using it as a blend amount for the **VRayBlendMtl** produces color blended materials. To avoid this, we use the red and green outputs from the **VRayCurvature** map separately to create two monochromatic masks. This allows the generated red-green gradient to be used as a grayscale blend amount, like in all other Curvature modes. In this setup an additional (third) Dark Patina material is used, which appears in the most concave parts of the model. We connect the red output to the **Blend amount RGB** inputs of the Copper coat and the green output to the **Blend amount RGB** inputs of the Dark Patina coat. Click on the expandable menu to view the exact Hypershade setup for this example. In addition, the **Threshold** is set to **0.300** and the **Output Color Lift** is set to **0.180** to achieve a more pleasant result.

Hypershade setup for Both mode



### Example: Ignore Bump

In this example, we've used a **V-Ray Curvature map** to darken the most protruded areas and simulate a burnished leather effect. To do so, a darker version of the original leather material is created using a **color correction** map and both nodes are linked to a **V-Ray Layered Texture** as separate layers. **V-ray Curvature** serves as the mask of the color-corrected layer. Here the V-Ray Curvature map uses **6 Subdivs**, a **Sample Spread** of **0.4**. The **Max Output Color** is set to **5** and the **Threshold** is set to **0.05**. All other parameters are left at their default state.



Ignore Bump OFF



**Ignore Bump ON**



**Original**