Supported Rendering Features

This page provides tables of features supported in CPU and GPU rendering with V-Ray in Rhino.

Overview

These features are supported by V-Ray in Rhino for Interactive and Non-Interactive rendering modes.

Both RTX and CUDA share the same V-Ray GPU engine supported features.

For more information on V-Ray GPU, see the GPU Rendering.

Supported Features

Main Render features

Feature	V-Ray CPU	V-Ray GPU
Interactive rendering	✅	✅
Progressive image sampler	✅	✅
Bucket image sampler	✅	✅
Resumable rendering	⛔	⛔
V-Ray Denoiser	✅	✅
NVIDIA AI Denoiser1	✅	✅
Intel Open Image Denoise	✅	✅ (always calculated by CPU)
Viewport rendering (VPR)	✅	✅
Viewport region rendering	✅	✅
Batch rendering	✅	✅
Cloud rendering	✅	✅
Batch render in Cloud	✅	✅
Distributed rendering via Swarm	✅	✅
Rendering in Grasshopper	✅	✅
Unbacked Grasshopper geometry	✅	✅

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Other Render features

Feature	V-Ray CPU	V-Ray GPU
VRayLensEffects (VFB)	✅	✅
Antialiasing	✅	✅

Feature	V-Ray CPU	V-Ray GPU
Adaptive Lights	✅	✅
VFB	✅	✅
Render Elements [4]	✅	✅
Anisotropy	✅	✅
Aerial Perspective	✅	✅
Environment Fog	✅	✅
Outlines	✅	⛔
Photon Mapped Caustics	✅	⛔
Post Effect Color Corrections	✅	✅
GPU Memory Management	⛔	✅
RPC [5]	✅	✅

Environment Background Mapping

Feature	V-Ray CPU	V-Ray GPU
Spherical mapping	✅	✅
Mirror ball mapping	✅	✅
Angular mapping	✅	✅
Cubic mapping	✅	✅
Screen mapping	✅	✅
Color/Texture Multipliers	✅	✅

Global Illumination Methods

Feature	V-Ray CPU	V-Ray GPU
Brute Force	✅	✅
Light Cache	✅	✅
Irradiance Map	✅	⛔
GI Caustics	✅	✅

Camera

Feature	V-Ray CPU	V-Ray GPU
VRayPhysicalCamera	✅	✅
Camera Depth of Field	✅	✅
Camera motion blur	✅	✅
Stereoscopic	✅	✅

VR Cubemap	✅	✅
VR Spherical Panorama	✅	✅
Automatic Exposure	✅	✅
Automatic White Balance	✅	✅
Film sensitivity (ISO)	✅	✅
Aperture (F-Number)	✅	✅
Shutter Speed (1/s)	✅	✅
Vignetting	✅	✅
Vertical Tilt	✅	✅
Bokeh	✅	✅

Geometry

Feature	V-Ray CPU	V-Ray GPU
Triangle meshes	✅	✅
VRayProxy	✅	✅
Alembic via proxy	✅	✅
Subdivisions	✅	✅
Displacement	✅	✅
VRayFur	✅	✅
Infinite plane	✅	✅
VRayClipper	✅	PARTIAL (Only Section Plane)
V-Ray Scene	✅	✅
V-Ray Scatter	✅	✅
V-Ray Decal	✅	✅
V-Ray Enmesh	✅	✅

Lights

Feature	V-Ray CPU	V-Ray GPU
SunLight	✅	PARTIAL (Affect Diffuse and Specular controls not supported)
Rectangle Light	✅	PARTIAL (Decay control not supported)
Sphere Light	✅	PARTIAL (Decay control not supported)

Spot Light	✅	PARTIAL (Affect Diffuse and Specular controls and Inverse cube decay not supported)
IES Light	✅	✅
Omni Light	✅	PARTIAL (Affect Diffuse/Specular controls and Inverse cube decay not supported)
Mesh Light	✅	PARTIAL (Texture map and Decay control not supported)
Dome Light	✅	✅
Directional Light	✅	PARTIAL (Affect Diffuse and Specular controls not supported)

Materials

Feature	V-Ray CPU	V-Ray GPU
Blend	✅	✅
Car Paint	✅	✅
Emissive	✅	PARTIAL (without Emit on Back Side; Color*Opacity always on)
Generic (V-Ray Material)	✅	✅ (without Roughness, Refraction Glossiness and Fog Scattering)
Override	✅	PARTIAL (without Environment)
Two Sided	✅	PARTIAL (without Multiply By Front diffuse; Force Single Sided always on)
Wrapper	✅	PARTIAL (without Ignore Objects in Secondary, Caustics Affect)
Subsurface Scattering	✅	⛔
Bump	✅	✅
VRscan	✅	✅
Hair	✅	✅
Outline Override	✅	⛔
Multi Material	✅	✅

Textures

Feature	V-Ray CPU	V-Ray GPU

Texture		
Bitmap[6]	✅	✅ (without filtering and Environment texture placement)
Color	✅	✅
Temperature	✅	✅
Gradient	✅	✅ (without Environment texture placement)
Sky	✅	✅ (without Caustics)
Color Correction	✅	✅
Spline Curve	✅	✅
Bezier Curve	✅	✅
Simple Mix	✅	✅
Mix (Value)	✅	✅
Mix (Operator)	✅	✅
Mix (Map)	✅	✅ (except Mix Curve)
Multi-Sub[3]	✅	✅
Tri-Planar	✅	✅
Checker	✅	✅ (except Environment texture placement)
Grid	✅	✅ (except Environment texture placement)
Tiles	✅	✅ (except Environment texture placement)
Cloth	✅	✅ (except Environment texture placement)
Leather	✅	✅ (except Environment texture placement)
Bulge	✅	✅ (except Environment texture placement)
UVW	✅	✅ (without Environment)
Water [8]	✅	✅ (without Environment)
Noise A	✅	✅ (except Environment texture placement)
Noise B	✅	✅ (except Environment texture placement)

Feature	V-Ray CPU	V-Ray GPU
Cellular	✅	✅ (except Environment texture placement)
Marble	✅	✅ (except Environment and 3D World texture placement)
Splat	✅	✅ (except Environment and 3D World texture placement)
Smoke	✅	✅ (except Environment texture placement)
Stucco	✅	✅ (except Environment and 3D World texture placement)
Rock	✅	✅ (except Environment and 3D World texture placement)
Granite	✅	✅ (except Environment and 3D World texture placement)
Speckle	✅	✅ (except Environment and 3D World texture placement)
Edges	✅	✅
Falloff [2]	✅	✅
Fresnel	✅	✅
VRayDirt [3]	✅ (without Ignore Self Occlusion)	✅ (without Ignore Self Occlusion)
Curvature	✅	✅
UVW Placement	✅	PARTIAL (except Environment and partial support of bitmap textures)

Render Elements

Feature	V-Ray CPU	V-Ray GPU
Atmosphere	✅	✅
Background	✅	✅
Bump Normals	✅	✅
Caustics	✅ (without Filtering control)	⛔
Outlines	✅	⛔
Cryptomatte	✅ (without Filtering control)	✅
Denoiser	✅	✅
Diffuse	✅	✅
DR Bucket	✅	✅
ExtraTex	✅	✅

	V-Ray CPU	V-Ray GPU
Geometry Normals	✅	✅
Global Illumination	✅	✅
Lighting	✅	✅
Lighting Analysis	✅	PARTIAL (Luminance only)
Light Mix	✅	✅
Material ID Color	✅	✅
Material ID Number	✅	✅
Material Random Color	✅	✅
Matte Shadow	✅	⛔
MultiMatte	✅	✅
Object ID	✅	✅
Raw GI	✅	✅
Raw Light	✅	✅
Raw Reflection	✅	✅
Raw Refraction	✅	✅
Raw Shadows	✅	✅
Raw Total Light	✅	✅
Reflection	✅	✅
Reflection Filter	✅	✅
Refraction	✅	✅
Refraction Filter	✅	✅
Render ID	✅	✅
Sample Rate	✅	✅
Self Illumination	✅	✅
Shadows	✅	✅
Specular	✅	✅
Subsurface Scattering	✅	⛔
Total Light	✅	⛔
Z-Depth	✅	✅

3rd-party plugins

Feature	V-Ray CPU	V-Ray GPU
Bongo [7]	✅	✅
Cloud support for Bongo	–	–

HDR Light Studio	✅	✅
Cloud support for HDR Light Studio	✅	✅
Archvision RPC	✅	✅
Cloud support for Archvision RPC	✅	✅
Rhino Nature	✅	✅

Enscape

Feature	V-Ray CPU	V-Ray GPU
Enscape materials	PARTIAL (except Grass and Carpet material types)	PARTIAL (except Grass and Carpet material types)
Enscape geometry assets	PARTIAL (Enscape assets provided by 3D PEOPLE are currently not supported)	PARTIAL (Enscape assets provided by 3D PEOPLE are currently not supported)
Enscape material keywords	PARTIAL (except Grass and Carpet material keywords)	PARTIAL (except Grass and Carpet material keywords)

Footnotes

1 – Displacement results between CPU and GPU rendering may differ slightly because of Pre-tessellation and Cache Normal settings.

2 – Only some procedural textures are supported by V-Ray GPU renderer when used for Bump mapping (f.e. noise and mix maps are supported).

3 – These plug-ins are only partially supported on GPU.

4 – For now only Lighting, GI, Reflection, Refraction, Bump Normals, Self Illumination, Diffuse Filter, Reflection Filter, Refraction Filter, Specular, ZDepth, Normals, Multi Matte and Light Select (GI, reflection, and refraction included) are supported.

5 – RPC are not supported in Interactive rendering mode. Changes done to the RPC model will not be visible in Interactive mode. Please note, that loading RPC models may take substantial time.

6 – The playback options are currently not supported.

7 – Bongo animation is exported as a series of still frames instead of animation frames. Due to this behavior, Motion Blur effect is not supported.

8 – The Water texture is used only for displacement.

- CUDA engine supports map channels from 0 to 15.
- CUDA engine only supports normal maps in tangent space.
- Difference between V-Ray and V-Ray GPU are expected when rendering objects with opacity/translucency modifications.
- When a material is not directly applied to an object or layer but instead only referenced by another asset, e.g. a Proxy Mesh material, and it is introduced through a worksession import, it will not be imported if a naming conflict occurs with a pre-existing material. This is due to a Rhino SDK limitation.