V-Ray Render Elements Support

- In order to produce correct Render Elements for Fire/Smoke simulations, the Phoenix Simulator needs Render Mode to be set to **Volumetric Geometry** with V-Ray 5, V-Ray Next and V-Ray 3.
- In order to produce correct Render Elements, the Particle Shader needs **Render as Geometry** to be **enabled** with V-Ray 5, V-Ray Next and V-Ray 3.
- Please note that Particle Shader rendering is currently not supported with V-Ray 3 GPU and V-Ray Next GPU.
- Keep in mind that V-Ray Next or V-Ray 3 Adv. CPU produce correct results with **Progressive** sampler for Render Elements only when **Enable Filtering** is **on**.
- Rendering of Fire/Smoke elements with V-Ray Next GPU requires Phoenix 3.12 and V-Ray Next update 1 nightly 28798 (18th December 2018) builds or newer.

List of Supported V-Ray Render Elements

Render Element	V-Ray 6 Volumetric	V-Ray 6 Volumetric Geometry	V-Ray 6 GPU Volumetric	V-Ray 6 GPU Volumetric Geometry	V-Ray 6 Particle Shader	V-Ray 6 Particle Shader: Render as Geometry	Description / Additional Notes
Multi Matte							Creates selection masks based on object G-buffer ID or material ID.
Atmospheric Effects			*				Gives Fire + Smoke.
Background							Image background, such as any Background Texture specified in the Environment Overrides.
BumpNormals							The normals generated by bump maps, in screen space (which is not the same as camera space). Use the VRaySamplerInfo render element to get the normals in camera, world or object space.
Caustics							The caustics on the material. These caustics are present only when the Caustics option of V-Ray is enabled. This channel does not include GI caustics.
Cryptomatte							Uses the Cryptomatte convention by Psypop to encode mattes into multichannel OpenEXRs.
Denoiser							Applies a denoising operation to the image after it is rendered (with the necessary channels).
Diffuse							The pure diffuse surface color. Note that this is different from the standard 3ds Max Diffuse render element, which contains the diffuse surface lighting.
ExtraTex							Renders the entire scene with one texture mapped on all objects.
GI	*(when Use Light Cache is disabled)*						The diffuse surface global illumination. Only present if **Global illumination** is enabled.
Lighting							The diffuse direct surface lighting.
Lighting Analysis							Provides visual representation the lighting intensity within a rendered frame.
LightSelect							Extracts the contribution of a user-defined light or a set of lights in the scene as a separate render element.
Matte Shadow			*Not Available*	*Not Available*			The matte shadow part of the image.
Material ID							Material ID of scene objects.
Material Select			*Not Available*	*Not Available*			Renders only the object(s) assigned to a user-specified V-Ray compatible material. The material can be a top-level material or a sub-material of a VRayBlendMtl.
Normals					Fog Mode only	Fog Mode only	The surface normals in screen space (which is not the same as camera space). To output the normals in camera/object/world space, use VRaySamplerInfo render element.
Object ID							The object G-buffer ID (set through the node's Properties dialogue).
Object Select			*Not Available*	*Not Available*			Stores only the object(s) called out with a specific Object or Material ID.

Render Element							Description / Additional Notes
Raw Diffuse Filter			*Not Available*	*Not Available*			A solid mask of raw diffuse surface color information not affected by Fresnel falloff.
Raw GI			*Not Available*	*Not Available*			Raw diffuse global illumination (not multiplied by the diffuse surface color). Only present if **Global illumination** is enabled.
Raw Light			*Not Available*	*Not Available*			The raw diffuse direct illumination before it's multiplied by the diffuse surface color.
Raw Reflection			*Not Available*	*Not Available*			The pure surface reflection, before it is multiplied by the reflection filter color.
R a w Refraction			*Not Available*	*Not Available*			The pure surface refraction before it is multiplied by the refraction filter color.
Raw Shadow			*Not Available*	*Not Available*			The raw light that was blocked by other objects.
Raw Total Light			*Not Available*	*Not Available*			The sum of all raw lighting - direct and indirect.
Reflection							The reflections on the surface.
Refraction							The refractions on the surface.
Render ID							The node render ID of the object that contributes most to the pixel value.
Sample Rate							Shows an image where the pixel brightness is directly proportional to the number of samples taken at this pixel.
Sampler Info							Provides information about various aspects of the shaded points - position, normal, bump normal, reflection/refraction vectors and UVW coordinates. Can be used e.g. for world position passes or normal passes. Using V-Ray Next or V-Ray 3 Adv. CPU - this Render Element will work correctly only with **Bucket** sampler and **Enable Filtering** is **off**.
Self Illumination							The self-illumination of the surface.
Shadow							The diffuse light that was blocked by other objects.
Specular							The surface specular highlights. Specular should hold direct illumination - illumination from the fire comes as GI so result here should be correct: the element is not affected by the Fire.
Total Light			*Not Available*	*Not Available*			The total lighting in the scene, direct and indirect.
Unclamped Color							The unclamped image color.
Velocity							The surface velocity. This channel will not be generated if 3d motion blur is enabled.
Z-depth							The z-depth of the surface. Using V-Ray Next or V-Ray 3 Adv. CPU - this Render Element will work correctly only with **Bucket** sampler and **Enable Filtering** is **off**.

V-Ray 5

Render Element	V-Ray 5 ___ Volumetric	V-Ray 5 Volumetric Geometry	V-Ray 5 GPU ___ Volumetric	V-Ray 5 GPU Volumetric Geometry	V-Ray 5 Particle Shader	V-Ray 5 Particle Shader: Render as Geometry	Description / Additional Notes
Multi Matte							Creates selection masks based on object G-buffer ID or material ID.
Atmospheric Effects							Gives Fire + Smoke.
Background							Image background, such as any Background Texture specified in the Environment Overrides.
BumpNormals							The normals generated by bump maps, in screen space (which is not the same as camera space). Use the VRaySamplerInfo render element to get the normals in camera, world or object space.
Caustics							The caustics on the material. These caustics are present only when the Caustics option of V-Ray is enabled. This channel does not include GI caustics.
Cryptomatte						*Bucket Sampler only*	Uses the Cryptomatte convention by Psypop to encode mattes into multichannel OpenEXRs.
Denoiser							Applies a denoising operation to the image after it is rendered (with the necessary channels).
Diffuse							The pure diffuse surface color. Note that this is different from the standard 3ds Max Diffuse render element, which contains the diffuse surface lighting.
ExtraTex							Renders the entire scene with one texture mapped on all objects.

							Description
GI	(when Use Light Cache is disabled)						The diffuse surface global illumination. Only present if Global illumination is enabled.
Lighting							The diffuse direct surface lighting.
Lighting Analysis							Provides visual representation of the lighting intensity within a rendered frame.
LightSelect							Extracts the contribution of a user-defined light or a set of lights in the scene as a separate render element.
Matte Shadow			Not Available	Not Available			The matte shadow part of the image.
Material ID							Material ID of scene objects.
Material Select			Not Available	Not Available			Renders only the object(s) assigned to a user-specified V-Ray compatible material. The material can be a top-level material or a sub-material of a VRayBlendMtl.
Normals							The surface normals in screen space (which is not the same as camera space). To output the normals in camera/object/world space, use VRaySamplerInfo render element.
Object ID							The object G-buffer ID (set through the node's Properties dialogue).
Object Select			Not Available	Not Available			Stores only the object(s) called out with a specific Object or Material ID.
Raw Diffuse Filter			Not Available	Not Available			A solid mask of raw diffuse surface color information not affected by Fresnel falloff.
Raw GI			Not Available	Not Available			Raw diffuse global illumination (not multiplied by the diffuse surface color). Only present if Global illumination is enabled.
Raw Light			Not Available	Not Available			The raw diffuse direct illumination before it's multiplied by the diffuse surface color.
Raw Reflection			Not Available	Not Available			The pure surface reflection, before it is multiplied by the reflection filter color.
Raw Refraction			Not Available	Not Available			The pure surface refraction before it is multiplied by the refraction filter color.
Raw Shadow			Not Available	Not Available			The raw light that was blocked by other objects.
Raw Total Light			Not Available	Not Available			The sum of all raw lighting - direct and indirect.
Reflection							The reflections on the surface.
Refraction							The refractions on the surface.
Render ID							The node render ID of the object that contributes most to the pixel value.
Sample Rate							Shows an image where the pixel brightness is directly proportional to the number of samples taken at this pixel.
Sampler Info							Provides information about various aspects of the shaded points - position, normal, bump normal, reflection/refraction vectors and UVW coordinates. Can be used e.g. for world position passes or normal passes. Using V-Ray Next or V-Ray 3 Adv. CPU - this Render Element will work correctly only with Bucket sampler and Enable Filtering is off.
Self Illumination							The self-illumination of the surface.
Shadow							The diffuse light that was blocked by other objects.
Specular							The surface specular highlights. Specular should hold direct illumination - illumination from the fire comes as GI so result here should be correct: the element is not affected by the Fire.
Total Light			Not Available	Not Available			The total lighting in the scene, direct and indirect.
Unclamped Color							The unclamped image color.
Velocity							The surface velocity. This channel will not be generated if 3d motion blur is enabled.
Z-depth							The z-depth of the surface. Using V-Ray Next or V-Ray 3 Adv. CPU - this Render Element will work correctly only with Bucket sampler and Enable Filtering is off.

V-Ray Next/V-Ray 3

Render Element	V-Ray Next / V-Ray 3 Adv Volumetric	V-Ray Next / V-Ray 3 Adv Volumetric Geometry	V-Ray Next GPU Volumetric	V-Ray Next GPU Volumetric Geometry	V-Ray Next / V-Ray 3 Adv Particle Shader	V-Ray Next / V-Ray 3 Adv Particle Shader: Render as Geometry	Description / Additional Notes
Multi Matte							Creates selection masks based on object G-buffer ID or material ID.
Atmospheric Effects							Gives Fire + Smoke.
Background							Image background, such as any Background Texture specified in the Environment Overrides.
BumpNormals							The normals generated by bump maps, in screen space (which is not the same as camera space). Use the VRaySamplerInfo render element to get the normals in camera, world or object space.
Caustics							The caustics on the material. These caustics are present only when the Caustics option of V-Ray is enabled. This channel does not include GI caustics.
Cryptomatte		*Bucket Sampler only*				*Bucket Sampler only*	Uses the Cryptomatte convention by Psypop to encode mattes into multichannel OpenEXRs.
Denoiser							Applies a denoising operation to the image after it is rendered (with the necessary channels).
Diffuse							The pure diffuse surface color. Note that this is different from the standard 3ds Max Diffuse render element, which contains the diffuse surface lighting.
ExtraTex							Renders the entire scene with one texture mapped on all objects.
GI	*(when Use Light Cache is disabled)*						The diffuse surface global illumination. Only present if Global illumination is enabled.
Lighting							The diffuse direct surface lighting.
Lighting Analysis							Provides visual representation of the lighting intensity within a rendered frame.
LightSelect	(since V-Ray Next, update 3)						Extracts the contribution of a user-defined light or a set of lights in the scene as a separate render element.
Matte Shadow			*Not Available*	*Not Available*			The matte shadow part of the image.
Material ID							Material ID of scene objects.
Material Select			*Not Available*	*Not Available*			Renders only the object(s) assigned to a user-specified V-Ray compatible material. The material can be a top-level material or a sub-material of a VRayBlendMtl.
Normals							The surface normals in screen space (which is not the same as camera space). To output the normals in camera/object/world space, use VRaySamplerInfo render element.
Object ID							The object G-buffer ID (set through the node's Properties dialogue).
Object Select			*Not Available*	*Not Available*			Stores only the object(s) called out with a specific Object or Material ID.
Raw Diffuse Filter			*Not Available*	*Not Available*			A solid mask of raw diffuse surface color information not affected by Fresnel falloff.
Raw GI			*Not Available*	*Not Available*			Raw diffuse global illumination (not multiplied by the diffuse surface color). Only present if Global illumination is enabled.
Raw Light			*Not Available*	*Not Available*			The raw diffuse direct illumination before it's multiplied by the diffuse surface color.
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Raw Refraction			*Not Available*	*Not Available*			The pure surface refraction before it is multiplied by the refraction filter color.
Raw Shadow			*Not Available*	*Not Available*			The raw light that was blocked by other objects.
Raw Total Light			*Not Available*	*Not Available*			The sum of all raw lighting - direct and indirect.
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Unclamped Color							The unclamped image color.
Velocity							The surface velocity. This channel will not be generated if 3d motion blur is enabled.
Z-depth							The z-depth of the surface. Using V-Ray Next or V-Ray 3 Adv. CPU - this Render Element will work correctly only with Bucket sampler and Enable Filtering is off.

* - **Light Select** render element in Light Path Expression mode can be used to obtain an equivalent of the **Atmospheric Effects** on **V-Ray GPU** with a Phoenix Simulator or Particle Shader in Fog mode present in it.

A possible example expression would be **(C[O])|(CV.*)**. Note though that the **(C[O])** part will also capture other directly visible emissive objects (excluding the lights) in the scene alongside the directly visible fire.