Using TexUVW for Creating Thin Smoke

The instructions on this page guide you through the process of creating a thin smoke using Chaos Phoenix 4.30.

Overview

This is an Intermediate Level tutorial. Even though no previous knowledge of Phoenix is required to follow along, re-purposing the setup shown here to another shot may require a deeper understanding of the host platform's tools, and some modifications of the simulation settings.

Phoenix 4.30 offers a feature called TexUVW that allows fluids to transport UVW information along with the moving fluid. Before that, mapping the fluid's color or opacity for rendering had the texture maps fixed in one place as the fluid flows through them. In this tutorial, we are going to use this new grid data for controlling the rendering opacity of smoke.

Although Phoenix already provides a Cigarette Smoke Quick Preset, it uses a particle-based method that requires a large number of particles small enough to produce smooth thin smoke. This could require a lot of memory and could be quite slow to simulate if you need to render it in high resolution. In this tutorial, we show you an alternative method. First, we simulate regular smoke (non-particle based) and then use a Noise texture to modulate the opacity of the smoke. In the end, we can have convincing thin, wispy, cigarette-type smoke results.

This simulation requires Phoenix FD 4.30 Nightly Build from 19 January 2021 and V-Ray Next Official Release at the least. You can download nightlies from https://nightlies. chaos.com or get the latest official Phoenix and V-Ray from ht tps://download.chaos.com. If you notice a major difference between the results shown here and the behavior of your setup, please reach us using the Support Form.

The **Download** button below provides you with an archive containing the start and end scenes.

Download Project Files

Units Setup

Scale is crucial for the behavior of any simulation. The realworld **size of the Simulator** in **units** is important for the simulation dynamics. Large-scale simulations appear to move more slowly, while mid-to-small scale simulations have lots of vigorous movement. When you create your Simulator, you must check the **Grid** rollout where the real-world extents of the Simulator are shown. If the size of the Simulator in the scene cannot be changed, you can cheat the solver into working as if the scale is larger or smaller by changing the **Sc ene Scale** option in the **Grid** rollout.

The Phoenix solver is not affected by how you choose to view the Display Unit Scale - it is just a matter of convenience.

The thin smoke effect we're creating is about 1 meter in height so we choose to view the units as Centimeters.

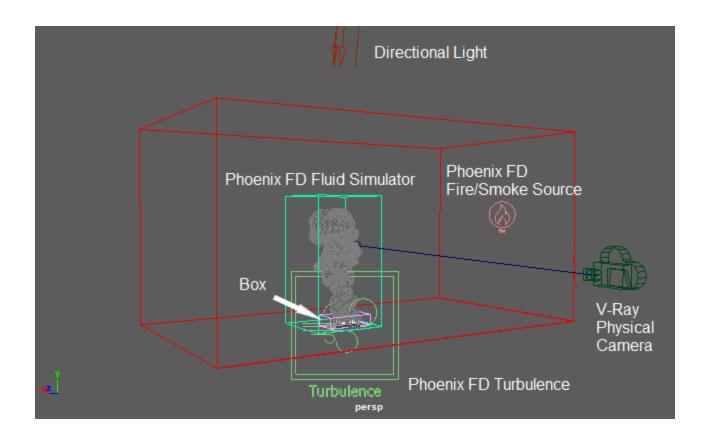
Go to Windows Settings and Preferences Preferences Settings and set the Working Units to Centimeters.

Categories	Settings: General Application Preferences
Interface 🔺	
UI Elements Help	World Coordinate System
Display	Up axis: • Y • Z
Kinematics Animation	Working Units
Manipulators NURBS	Linear: centimeter 💌
Polygons Subdivs	Angular: degrees 🔻
Font Settings	Time: 29.97 fps 💌
Animation Assets	Keep keys at current frames
Cached Playback	Tolerance
Cameras Color Management	Positional: 0.01000
Dynamics	Tangential: 0.10000
Files/Projects File References Modeling Node Editor Rendering Selection Snapping Sound	
Time Slider Undo 🗸	
	Save Cancel

Scene Layout

The final scene consists of the following elements:

- A Poly Model Box used as the smoke source.
 Phoenix Fluid Simulator.
 Phoenix Fire/Smoke Source emitting smoke from the Box geometry.
 Directional Light for lighting.
 V-Ray Physical Camera for rendering.
 Phoenix Turbulence for disturbing the smoke motion motion.



Scene Setup

Set the Windows Settings/Preferences Preferences Time Slider from 0 to 200 so that the Timeline goes from 0 to 200.

Categories	Time Slider: Animation Time Slider	and Playback Preference	es
Manipulators 🔺			^
NURBS	Time Slider		
Polygons Subdivs	Framerate: 29,	97 fpc	
Font			
Settings		(eep keys at current fram	ies
Animation Assets	Playback start/end: 0	200	
Cached Playback	Animation start/end: 0	200	
Cameras			
Color Management	Height: • 1	lx 🔍 2x	• 4x
Dynamics Files/Projects	Grease Pencil Frames: 🌑 👔	None 🔍 Act	tive 🔍 All
File References	Key ticks: 🌑 👔	None 🔍 Act	ive Channel Box
Modeling	Key tick size: ●		• 3x
Node Editor			
Rendering Selection	Time Display: • F		
Snapping	Channel Box Sync:	Sync Timeline Display	Sync Graph Editor Display
Sound	Snap to whole frames: 🗸 🤮	napping On	
Time Slider Undo	Tick Span: 0		
DX 11 Shader			
XGen	Playback		
GPU Cache	Playback speed: Play	y every frame 🛛 🔻	Other speed: 0,00
Save Actions Modules			
Applications	Playback by: 1		
	Save		Cancel

Create a **Poly Modeling Box**. The box is used as an emission object for the smoke.

Set its Width / Height / Depth to 32.0 cm / 3.0 cm / 3.0 cm.

Set its Width / Height / Depth Subdivisions to 1.

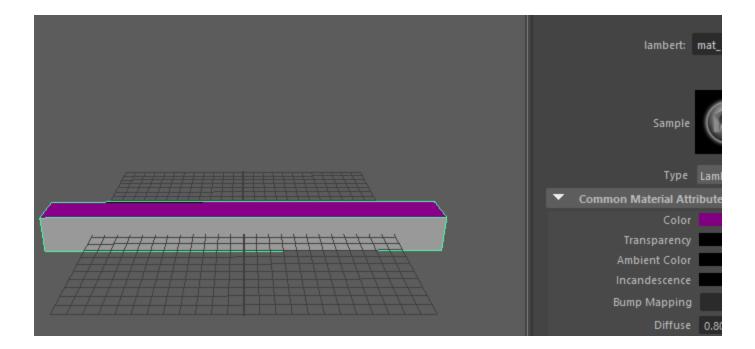
We simulate an effect looking like cigarette smoke. The size of this box is larger than a regular cigarette. We deliberately make it bigger (but not extremely large) because a slightly larger scale simulation is less chaotic and slower moving than the real effect thus creating a better cinematic feel.

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						100	us	
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						Show	Hide	
Poly	Cube Hist	tory						
		Width	32.000	- 1				1
		Height	3.000					
		Depth	3.000	•				1
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Su	bdivision	s Depth	1]				
	Cre	ate UVs	Normalize Coll	ectively and Pr	eserve A	spect f	Ratio	
Axis								
• Node	e Behavio							
								• •

The **Phoenix Source** nodes can use an **Emit Material** assign ed only on those faces which will be used for emission of fluid.

Select the Box geometry and go into Face Selection mode.

Select **only the top faces** which will be used for the emission and assign them a new Lambert material. Change its name to *mat_emit*.



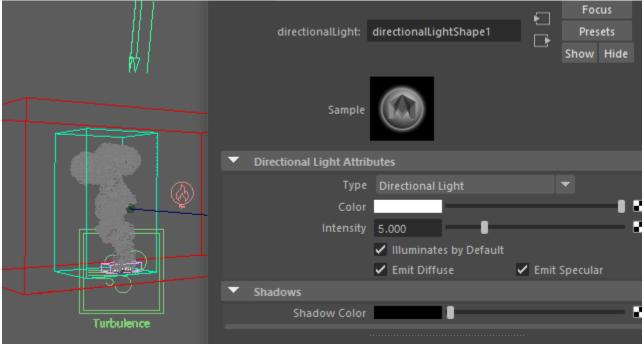
Create Light

Go to Create Panel Lights Directional Light in the scene.

Exact position of the light is (X, Y, Z): (0, 300, -41).

Set the Intensity to 5.

To save you some time, both the light and the camera are already included in the "*PhoenixFD_Thin_Smoke_Maya_STA RT.ma*" file.



Setup a Simulation

Add a **Phoenix FD Create Fire/Smoke Source**. The Fire /Smoke Source is a Phoenix helper node used to tell the Simulator which objects in the scene will emit, how strong the emission will be, etc.

Add the Box primitive into the Fire Source's Object Set.

The Object Set of the Source is used to specify the geometry in the scene that will be used to emit fluid into the Simulator.

With the Phoenix Source selected add the mat_emit material

to the Emit Material slot. Source Objects		
Object Set	phxSource_set1	>
Add Selected Objects	Edit Object Set	
Emit Material	mat_emit	

Create a Phoenix Fluid Simulator.

The exact position of the Phoenix Simulator in the scene is (X, Y, Z): (0, 0, 0).

Open the **Grid** rollout and set the following values:

- Cell Size: 1.0 cm.
- Size (X, Y, Z): (46, 11, 24).
- Container Walls all Open.
- Adaptive Grid: Smoke. The Adaptive Grid algorithm allows the bounding box of the simulation to dynamically expand when needed. With a Threshold of 0.02, the Simulator expands when the cells near the walls of the simulation bounding box reach a Smoke value of 0.02 or greater.
- Extra Margin: 5. The Extra Margin option is useful when the Adaptive Grid algorithm is unable to expand fast enough to accommodate quick movement in the simulation (e. g. an explosion). The Extra Margin attempts to remedy this by expanding the grid preemptively with the specified number of voxels on each side.
- Enable **Expand and Don't Shrink**, so the grid does not shrink in case empty space appears near the Simulator borders. This may cause clipping issues for very thin smoke, in our case below 0.02.
- Enable the Manual Adaptation Limits and set the limits to: X: (151, 193), Y: (0, 189), Z: (105, 98) to save memory and simulation time by limiting the Maximum Size of the simulation grid.

▼ Grid	
	Lock Voxel Count
Units	from Maya 💌
Scene Scale	1.000
Cell Size (units)	1.000
X Size	46
Y Size	11
Z Size	24
Total Cells	12 144 (46.00 cm x 11.00 cm x 24.00 cm)
	Increase Resolution
	Decrease Resolution
Container Walls	
х	Open 🔻
Y	Open 🔻
Z	Open 🔻
Grid Adaptation	

Gliu Adaptation	
Adaptive Grid	Smoke 🔻
Threshold	0.020
Extra Margin	5
	✓ No Smaller Than Initial Grid
	 Expand and Don't Shrink
Limited By	Memory (%) 🔻
Limited To	90
Preallocate Memory	When Adaptive 🔻
 Manual Adaptation Li 	mits
	✓ Enable Limits
- X	151
+ X	193
- Y	0
+ γ	189
- Z	105
+ Z	98
Fit Camera	
Max Cells	17 776 980

We want to Modulate the Smoke Opacity with Grid Texture UVW, so let's go to the **Phoenix Simulator Output** rollout and enable the **Texture UVW**.

Output Grid Channels			,
	🗸 Grid Temper./Liquid	~	Grid Smoke
	Grid RGB		Grid Wavelet
	Grid Speed		Grid Velocity
	Grid Viscosity	~	Grid Texture UVW
	Grid Fuel		Grid Advection Origin
Grid Special	None	-	

Under the Dynamics rollout of the Simulator, there is a **Textur e UVW** section. Here you have four parameters to control how Phoenix deals with Grid UVW data during simulation. In this special case, we don't need to change anything, so just leave them at their default values.

icao in condoi		
Interpolation Amount	0.000	1
Interpolation Step	1	8
Antitear Strength	0.100	
Antitear Iterations	1	8

Go to the **Phoenix Simulator Simulation rollout** and **disable** the **Use Timeline Stop Frame**. Set the **Custom Stop Frame** to **120**. Press the **Start** button to simulate.

Though the animation length is see earlier Stop Frame to save some iterating on the simulation setup.				
 Simulation 				
	Use Timeline Start Frame			
Custom Start Frame				
	Use Timeline Stop Frame			
Custom Stop Frame	120			
	Skip Dynamics Before Start Frame			
	Auto Save Before Simulation			
	Disable File Cache			
	Use Advection Origin for Motion Blur			
	Forward Simulation			

To enable the GPU Preview as seen in the video, select the P hoenix Simulator Preview rollout GPU Shade Preview Enable GPU Preview.

•	GPU Shade Preview					
		🗸 Enable GP	U Preview			
	Required GPU memory					
		🗸 Diffuse Lig	ghting			
		A	dd Selected Ligl	hts to GPU Pre	view	
	Lights	phxlight_set	1			>
	Max Lights	3				
	Ambient Lighting		1			-
	Gamma	2.200		1		l

Start the simulation. To the right is a Viewport Preview showing the result of the simulation so far.

As you can see in the preview animation, we have unwanted fire in the smoke.

Keep the simulation unchanged. Go to Simulator Rendering rollout Fire.

We still need to simulate the Temperature so it would make the smoke rise up, so we don't disable it from the simulation via the Output rollout, but instead just turn it off for rendering.

Set the **Smoke Color** to light gray color (**RGB = 245, 245, 245**, **245**). Also, **disable** the **Scattering**.

Now the smoke appears too thin, so let's increase the **Simple Smoke Opacity** to **0.9** (found in the Smoke Opacity rollout).

· rile							
Based on	Disabled	•				Reset to Defa	ults
Texture					N	/lodulate	
Fire	Opacity Mode	Fully Visil	ble			-	
Pł	nysically Based	1.000					(
Don't							
I	Fire Multiplier	1.000		-			
Opa	city Multiplier	1.000		-			

Smoke Color			
Based on Constant Cold	or 🔻		Reset to Defaults
Texture			Modulate
Constant Color		_	
Scattering	Disabled		▼
Scatter Depth			
	Volume Li	ight Ca	ache
Light Cache Speedup	0.900		
Own Light Scatter Mult			
External Scatter Mult			
Master Multiplier	1.000		
Shadow Strength	1.000		1
 Smoke Opacity 	_		
Based on Simple Smoke	•		Reset to Defaults
Texture			Modulate
Simple Smoke Opacity	0.900		
Minimum Visible Opacity	0.001	-	
	Scale Opa	acity by	y Scene Units
	Optimize	Big Vol	olumetric Grids

Without re-running the simulation, here is the Viewport Preview showing the result of the simulation so far.

If you don't see any smoke in the viewport, please make sure you have selected the correct viewport. By default, the Preview rollout's **Active View Only** option is enabled, so only the selected viewport shows the GPU Preview.

Slow Down the Smoke

Our final goal for the simulation is a smooth, natural-swirling, cigarette smoke look. So all of the following steps aim at this goal. Now the smoke appears to be running too fast.

To slow it down, change the Time Scale from 1.0 to 0.7.

Dynamics					
Motion Inertia	1.000			- 1	~
Gravity	1.000		-		~
Gravity Vector					
Time Scale	0.700	- 8			
Cooling	0.050				
Smoke Dissipation	0.000	1			-
Smoke Buoyancy	0.000				-
Fuel Buoyancy	0.000				

Here is how the simulation looks so far.

Adding Phoenix Turbulence for Smoke Swirls

Create Phoenix FD Create Turbulence.

Position to (X, Y, Z): (0, 0, 0).

Set the Strength to 40.0 and the Size to 2600.

Reduce the Fractal Depth to 2.

The **Turbulence** is used to bring more swirls in the smoke. You can use the Preview rollout's Force preview in order to see what velocities the Turbulence adds to the simulation. Note that you have to turn off the GPU preview in order to see the forces.

Then, go to the **Phoenix Simulator** and run the simulation again.

Phoenix Turbulence	
	Create Pressure
Strength	40.000
Size	2600.000
Fractal Depth	2
Last Stage Scale	0.100
Last Stage Amplitude	0.500
Random Seed	0
Rate of Change	1.000
Decay	None
Affect	Velocity, Smoke, Temperature, Liquid, Foam, Splashes

Here is a Viewport Preview showing the result of the simulation so far.

Smoke Opacity Modulation

To preview exactly how the TexUVW mapping looks like, go to the **Simulator Rendering** rollout and click on the **Volumet ric Options.** In the **Smoke Opacity** rollout change the **Based on** to **Texture**.

Plug a **Volume Noise Texture** in the **Texture** slot. Change its name to "volumeNoise_test".

You can set up the Volume Noise Texture from scratch, or you can find this texture in the "*PhoenixFD_Thin_Smoke_Ma ya_END.ma*" scene file, in the Hypershade. It is called "*volum eNoise_test*".

Smoke (Opacity						
Based on	Texture	-		Reset to Defaults			
Texture	volumeNoise_	test		Modulate			
Simple S	moke Opacity	0.900]				
Minimum V	isible Opacity/	0.001					
		Scale Opacity by Scene Units					
		Optimize Big Volumetric Grids					

Next, go to the Hypershade and select the *volumeNoise_test* texture.

Set the Noise Type to Perlin Noise.

Threshold to 6.2.

Amplitude to 20.0.

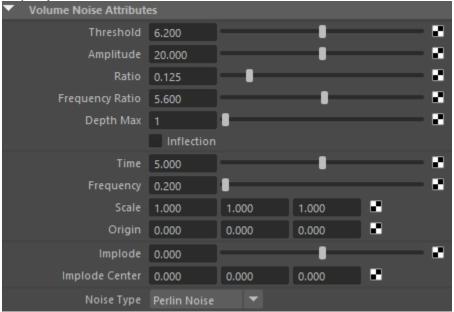
Ratio to 0.125.

Frequency Ratio to 5.6.

Depth Max to 1.

Time to 5.0.

Frequency to 0.2.



Then, scroll to the Effects rollout a	nd enable Inver t	t.			
Effects					
Filter	1.000				
Filter Offset	0.000				
	🖌 Invert		🖌 Wrap		
	Local				
Blend	0.000				
Color Remap		Insert		Ł	

All of these Volume Noise Texture settings are for demonstration purposes, so we can clearly see how the growing smoke distorts the Texture UVW and affects the applied Volume Noise Texture.

To alleviate grid artifacts during render time, set the **Sampler Type** to **Spherical** (found in the Rendering rollout).

Here the Rendering Step % is set to 10. This parameter specifies the ray marching step of the camera rays as a percentage of the cell size. In this step we set the Noise texture to be in contrast, so it tends to render out a noisy image. Because of that, we have to lower the value of Step % to reduce the noise and be able to capture all of the fine details of the smoke. A larger step size skips over some texture details. For a less contrast Noise texture, you can increase the value of Step % to save rendering time. Smaller Step % could increase render time dramatically. The default value is 90% of the voxel size. You should lower this parameter only if you get unacceptably noisy images.

Rendering					
	🗸 Enable Rende	ering			
		Render F	Presets		
Render Mode	Volumetric				
Step (%)	10 -	I			-
Shadow Step (%)	200	- 1-			-
Border Fade (units)	0.000				-
Sampler Type	Spherical 🔹				
Motion Blur Multiplier	1.000			•	-
Velocity Texture					

During the scene setup we use V-Ray 5, Hotfix 2 Official Release.

Set the **Animation** from **0** to **120**. Press the **Render** button to render the animation.

M Render Settings	- 🗆 X
Edit Presets Help	
Render Layer masterLayer	• Ø
Render Using V-Ray	•
Common VRay GI	Settings Overrides Render Elements IPR
Image File Output	Â
File Name Prefix	(not set; using filename)
Version Label	
Image Format	png 🔻
	Don't save image (ignored in batch mode)
	Output alpha channel to separate file
	Don't save alpha channel Don't save RGB channel
	Resumable rendering
Autosave interval (min)	
	Image format options
▼ Translator	
	✓ Render
	Export to a .vrscene file
Animation	
Animation	Standard 🔻
	Render animation only in batch mode
Start Frame	0.000
End Frame	120.000
By Frame	1.000 Run dynamics before animation start
	Close

Here's a rendered animation so far.

Notice how the cloudy texture is stretched horizontally - the noise spots in it are wide and thin. This is because the initial Simulator size at frame 0 (before the Adaptive Grid starts expanding) is a wide box, and the Volume Noise is stretched over it.

Note how the uniformly scattered white spots ("islands") get dragged as the smoke is floating up and are stretched into thin wisps. This effect is the product of fluid advection. This is a part of the look of the effect we are aiming at. Set the Smoke Opacity to be Based on Simple Smoke.

Enable the Modulate option.

Keep the **Volume Noise texture** that we used in the previous step and change the following settings:

Threshold to 6.0.

Ratio to 0.5.

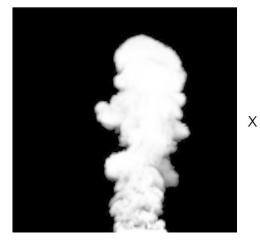
Depth Max to 2.

Time to 1.0.

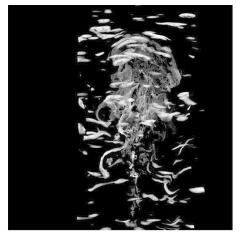
Frequency to 0.3

i requency to 0.5.				
 Smoke Opacity 				
Based on Simple Smol	ke 🔻		Reset to De	faults
Texture volumeNois	e_test		🗸 Modulate	
Simple Smoke Opacit	y 0.900			
Minimum Visible Opacit	y 0.001			
	Scale Op	acity by	Scene Units	
Optimize Big Volumetric Grids				

The images illustrate what the Modulation does when you modulate smoke with a Volume Noise Texture. On the left, we have smoke's opacity Based on Simple Smoke channel data. When **Modulate** option is enabled, and there is a **Volu me Noise Texture** in the Texture slot, it multiplies the Noise texture to create the final image on the right. You can think of it as if we are using a mask over the Volume Noise Texture in order to keep only the "islands" inside the smoke volume and remove the ones which are outside the simulated smoke. This is how you get this wispy smoke result. The key is having most of the Volume Noise Texture black and keeping only these high contrast spots in it, which are dragged along and stretched by the fluid.



Based on Simple Smoke



Based on Texture



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Smoke modulate

Here is a Viewport Preview showing the result of the simulation so far. You can see that currently there is an issue in the video. Some smoke areas are appearing out of nothing during the animation. This is because as the fluid travels through space, it meets new "islands" of opacity and starts dragging them along, which makes parts of the fluid suddenly appear.

Now you understand how this technique works and its possible side effects.

Let's adjust the final Volume Noise Texture for the Texture slot of the Smoke Opacity. The settings for the texture are now optimized in order to minimize the unnatural look of suddenly appearing/disappearing islands of smoke.

Plug a **Volume Noise Texture** in the **Texture slot**. Change its name to "*volumeNoise_final*".

You can set up the Volume Noise Texture from scratch or you can find this texture in the "*PhoenixFD_Thin_Smoke_Ma ya_END.ma*" scene file, in the Hypershade. It is called "*volum eNoise_final*".

As shown, set the Noise Type to Perlin Noise.

Threshold to 0.95.

Amplitude to 1.95.

Ratio to 0.707.

Frequency Ratio to 1.700.

Depth Max to 5.

Time to 0.0.

Frequency to 0.06.

volumeNoise_final					
volumeNoise:	volumeNoise_	final	Presets		
Sample					
Volume Noise Attribut	es				
Threshold	0.950			-	
Amplitude	1.950		-		
Ratio	0.707				
Frequency Ratio	1.700				
Depth Max	5				
	Inflection				
Time	0.000	1			
Frequency	0.060	1			
Scale	1.000	1.000	1.000		
Origin	0.000	0.000	0.000		
Implode	0.000				
Implode Center	0.000	0.000	0.000		
Noise Type	Perlin Noise	-			

We increase Rendering Step % from 10 to 40 because the Volume Noise Texture we used here does not need such a small render step in order to capture the detail.

List Selected Focus Attr	ibutes Display	Show Help	
PhoenixFDSim1 Phoenix	FDSimulator1	phxsim_set1 p	ohxlight_set1 🔹 🕨
		•	Focus
PhoenixFDSimulator:	PhoenixFDSimula	ator1	Presets
			Show Hide
Start Pause Stop R	estore Load	Load Current	Advanced 🔻
FICVICW			
 Rendering 			
	🖌 Enable Rend	ering	
		Render Presets	
Render Mode	Volumetric	-	
Step (%)	40	•	
Shadow Step (%)	200	•	
Border Fade (units)	0.000		
Sampler Type	Spherical 🔹	- <u> </u>	
Motion Blur Multiplier	1.000		— — -

Here is a rendered animation of the simulation so far.

The smoke looks quite choppy, but we are going for a smoother look. The noise in the smoke is caused by the **Vorti city** parameters in the Dynamics rollout of the Simulator. We can resolve this by reducing the **Smoke Surface** Vorticity to **0**.

Go to the Fire/Smoke Simulator and run the simulation again.

Vorticity		
Classic Vorticity		
	 Massive Vorticity 	
Smoke Surface	0.000	
Temperature Surface	0.100	
Large Scale	0.500	

Now we have smoother simulation results.

To achieve a better swirling motion in the simulation, we can change the conservation mode and increase the Conservation Quality parameter under the Dynamics rollout. Set the **Conservation Mode** to **PCG Symmetric, Quality** to **50.**

The **PCG Symmetric** conservation mode is ideal for smoke simulations or explosions because it tends to produce strong conservation which needs less conservation quality in order to look realistic. This method is also used for the **Cigarette Smoke quick preset**. So we choose this mode.

Go to the **Fire/Smoke Simulator**, and run the simulation again.

Beware that increasing the Quality would make the simulation take longer time. You can adjust the value depending on your profession

aep	ending on your preferences.					
	Fluidity (Conservation) —					
	Method	PCG Symmet	ric	•		
	Quality	50			•	
		🗸 Uniform (Density			
	Transport (Advection) —					
	Method	Multi-Pass		-		ľ
	Steps Per Frame	1	-			

Here is an animation showing what we've achieved so far. You can see the better swirling and rolling of the smoke. The behavior is now more like that of a thin smoke.

Bullet-time effect

Now, in order to make our animation more interesting, we can animate the Time Scale. This section of the tutorial is optional – you may skip to the Rendering section below.

To create the bullet-time effect, open the **Dynamics** rollout of the **Phoenix Simulator** and animate the **Time Scale** paramet er as follows:

> Frame 0: 0.7 Frame 100: 0.7 Frame 130: 0.3 Frame 145: 0.3 Frame 164: 0.7

The **Time Scale** is a global multiplier for the dynamics of the Simulator. Reducing it uniformly scales down all sources of velocity in the simulation.

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🚺 Search 💌	• •		140 10	54 xFDSim1	PhoenixFDSimulat		
PhoenixFDSim1				oenixFDS	imulator: PhoenixFl	Simulatori	Focus Presets Show Hid
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Final Simulation / Rendering

Now we are ready for the final simulation. Go to the Phoenix Simulator Simulation rollout and enable the Use Timeline Stop Frame. Press the Start button to run the simulation.				
	Simulation			
		✓ Use Timeline Start Frame		
			Γ	
		Use Timeline Stop Frame		
		Skip Dynamics Before Start Frame		
		Auto Save Before Simulation		
		Use Advection Origin for Motion Blur		
		Forward Simulation		
		Render On Each Sim Frame		

Now that our simulation is ready, let's render the full sequence from frame 0 to 200.

Animation				
Animation	Standard 🔻			
	Render animation only in batch mode			
Start Frame	0.000			
End Frame	200.000			
By Frame	1.000			
	Run dynamics before animation start			
	Reset dynamics after animation end			

 Resolution 	
Presets	HD 1080 🔻
	Maintain Width/Height Ratio
Maintain ratio:	Pixel aspect
	Device aspect
Width	1920
Height	1080
Device Aspect Ratio	1.777
Pixel Aspect Ratio	1.000

And this is our final animation.

The Cigarette Smoke Quick Preset

We have already finished this tutorial. But since Phoenix comes with a **Cigarette Smoke Quick Preset**, let's see the same settings as shown in this tutorial but using the Quick Preset.

The Cigarette Smoke Quick Preset is a particle-based method, which emits a large amount of particles from Fire /Smoke source and renders with the help of the **Particle Shader**. Because of the nature of this method, you need lots of particles in the scene. Furthermore, the particle size has to be small enough to alleviate grainy look. See the rendered clip of the Cigarette Smoke Quick Preset simulation.

You can find the finished Particle-based scene in the Downloadable project file "*PhoenixFD_Thin_Smoke_Particle_* <u>Maya_END.ma</u>".



Here we summarized the pros and cons of the two methods.

The technique we demonstrate in this tutorial creates softer and smoother results. The simulation and rendering are very fast compared to the particle-based ones. However, you can get more accurate results when using the Cigarette Smoke Quick Preset.

Feel free to use whichever method suits you best for a project.

Using TexUVW for Creating Thin Smoke (this tutorial)		Cigarette Smoke Quick Preset				
	Texture UVW Based	Particle Based				

Very smooth results even with low grid resolution	Requires tons of small particles for smoother results, otherwise looks grainy			
Soft but less accurate	Sharp and accurate			
Fast simulation	Takes more time for simulation			
Fast rendering	Slower rendering			
Requires Grid Texture UVW channel data	Emitting particles is necessary			
Once the simulation is set up, only the Noise texture can be adjusted without simulating again	Most changes in the look of the effect require simulating again			