

Liquid Resimulation

This page provides information on the Resimulation rollout.

Overview

Resimulation is a process that uses existing cache files (with exported [Grid Velocity](#)) as a base for a new simulation pass. It works differently for Fire /Smoke and Liquid simulations.

You can resimulate over the already resimulated cache files. By default Phoenix reads from a cache sequence and creates another resimulated cache sequence. But you can also use the same path as Resimulation Input and Ouput and overwrite the simulated cache sequence each time you run a new resimulation. For example, this way you can keep increasing the resolution every time you run a new resimulation, and repeat this many times. Due to the difference between the compression algorithms used by Phoenix's AUR format and the OpenVDB format, the resimulation process may produce a different result when using exported VDB caches as opposed to Aura caches if the Storage Quality option in the [Liquid Output](#) is not the maximum 20 (i.e. is not Lossless).

Liquid Resimulation Workflows

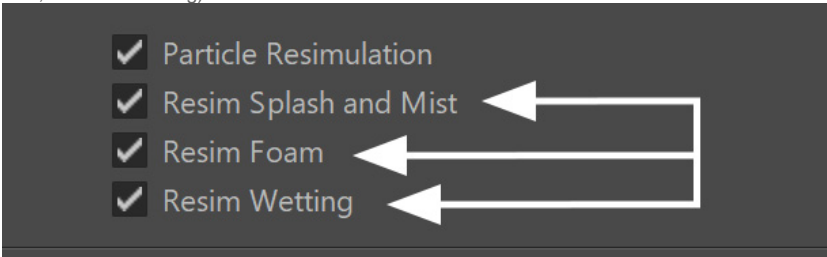
Liquid Resimulation uses an already simulated cache sequence and allows you to add, delete or modify the Splash, Mist, Foam or Wetmap particle systems, while preserving the Liquid and other particle systems that you are happy with.

The particle resimulation will affect only the particle systems which are checked in this rollout. If a particle system is not checked, it will remain unchanged. The Liquid always remains unchanged. While the Fire/Smoke Resimulation creates new cache files during the simulation process, the Liquid Resimulation overwrites the existing cache files.

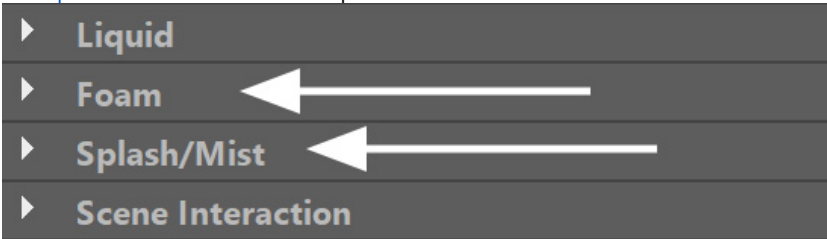
Using Resimulation to just modify a particle system is practical only in case you have a large number of secondary particles such as Foam, Splash, etc. in relation to the number of Liquid particles. Otherwise, if you have mostly Liquid particles and very few other particles, it will be faster to just simulate over again.

Modifying an existing particle system

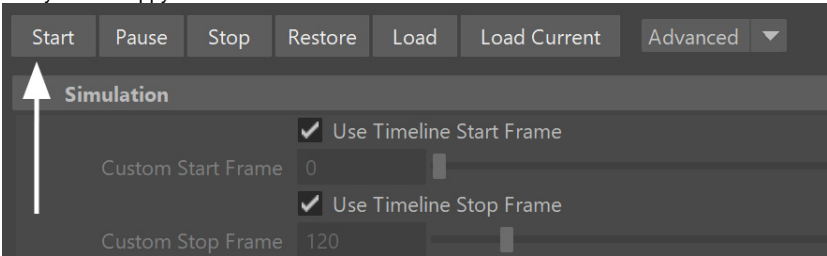
1
Select **Resimulation** **Enable Particle Resimulation** and select the respective particle system below (i.e. Splash and Mist, Foam or Wetting).



2
Modify the particle system's settings - e.g. for Foam, go to the [Liquid Foam](#) rollout and tweak the parameters there.



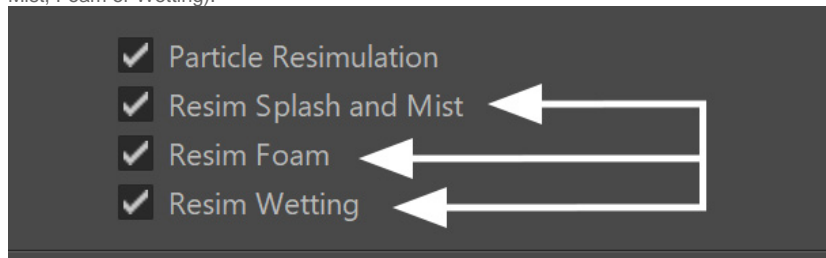
3
Hit **Start** to run the simulation again - repeat this process until you are happy with the result.



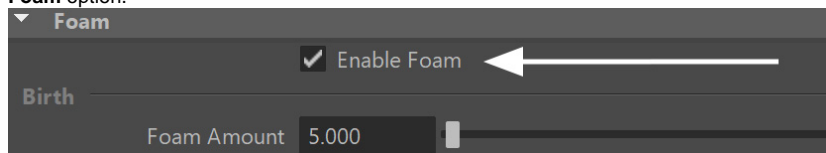
Adding a particle system that did not exist prior to resimulating

1

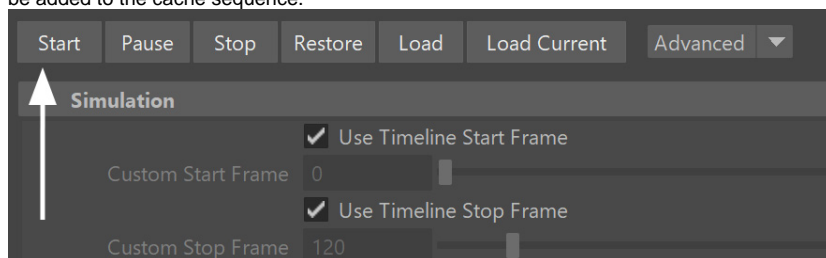
Select **Resimulation** **Enable Particle Resimulation** and select the respective particle system below (i.e. Splash and Mist, Foam or Wetting).



2
Make sure the particle system's simulation is *Enabled*, e.g. for Foam open the [Liquid Foam](#) rollout select the **Enable Foam** option.

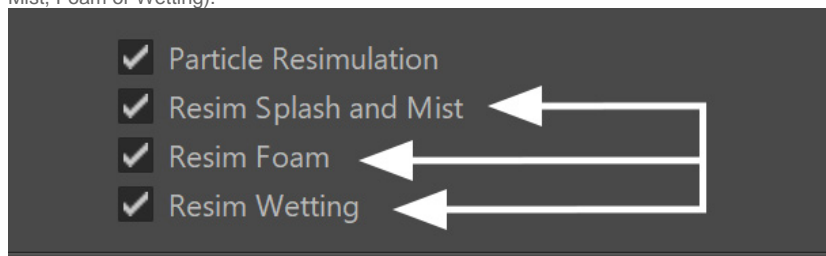


3
Hit **Start** to run the simulation again - the particle system will be added to the cache sequence.

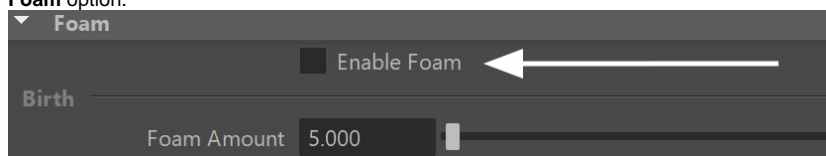


Deleting an existing particle system

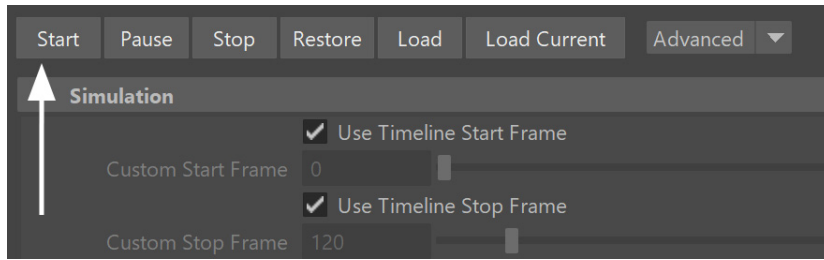
1
Select **Resimulation** **Enable Particle Resimulation** and select the respective particle system below (i.e. Splash and Mist, Foam or Wetting).



2
Make sure the particle system's simulation is *Disabled*, e.g. for Foam open the [Liquid Foam](#) rollout deselect the **Enable Foam** option.



3
Hit **Start** to run the simulation again - the particle system will be removed from the cache sequence.



UI Path: ||Select PhoenixFDSim|| > **Attribute Editor > Resimulation rollout**

Parameters

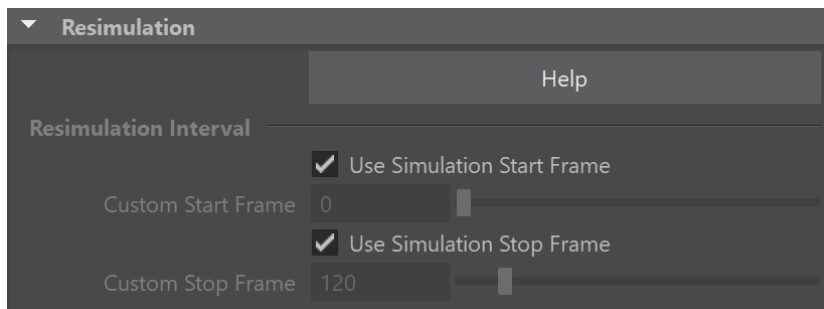
Help – Opens up the help documents for the Resimulation.

Use Simulation Start Frame | *rs_start_from_sim* - When enabled, the Resimulation will run **from the first frame of the base simulation** to the simulation End Frame or the Custom Stop Frame, depending on the options.

- **Custom Start Frame** | *rsStartFrame* – Explicitly sets the Start frame of the Resimulation. This can also be a negative number.

Use Simulation Stop Frame | *rs_stop_from_sim* - When enabled, the Resimulation will run from the base simulation Start Frame or the Custom Start Frame **to the last frame of the base simulation**.

- **Custom Stop Frame** | *rsStopFrame* – Explicitly sets the End frame of the Resimulation. This can also be a negative number.



Particle Resimulation

Particle Resimulation | *resim_resimulate_particles* – Enable s/disables the Particle Resimulation.

Resim Splash and Mist | *rsPartSplash* – Specifies that the splash and mist will be recalculated.

The **Affect Liquid** parameter on the Liquid Splash and Mist rollout will be ignored when resimulating Splash, because the liquid is already simulated and cannot be changed without a full simulation.

Resimulating the **Foam on Hit** parameter on the Liquid Splash and Mist rollout requires Splash and Mist to be resimulated.

Resim Foam | *rsPartFoam* – Specifies that the foam will be recalculated.

Resim Wetting | *rsPartWet* – Specifies that a WetMap will be recalculated.

The **Sticky Effect** setting for Wetting is ignored when resimulating wetting. This is because the liquid is already simulated and cannot be changed without a full simulation.

- ☐ Particle Resimulation
- ☒ Resim Splash and Mist
- ☒ Resim Foam
- ☒ Resim Wetting

Resimulation Cache

During resimulation, Phoenix reads cache files from the **Base Cache Files Path**, performs resimulation operations, and

then saves a new cache sequence in the **Output and Render Path**.

For information on changing the default paths for resimulation, see the [Tips and Tricks](#) page.

Base Cache Files Path | *rsInput* – Specifies the base simulation caches which will be read as base for resimulation. *\$(same_as_output)* by default. The field below shows the resolved full path.

Output and Render Path | *rsOutput* – Specifies the path for writing the output cache files from Fire/Smoke resimulation. Note that Liquid resimulation overwrites the files in the Base Cache Files Path and also uses that path for preview and rendering. See the Simulation Save Path parameter in the [Output Rollout](#) for more details on the *\$(...)* macros you can use. The field below shows the resolved full path.

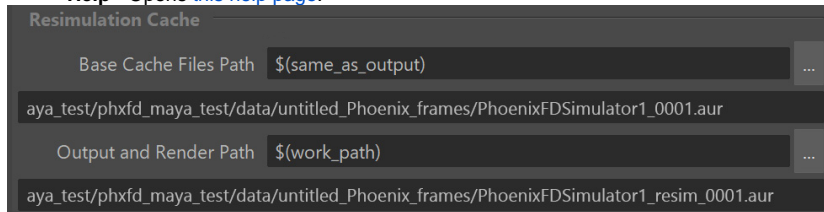
Click the "..." button to open a menu with the following options:

Browse - Opens a dialog where you can select where the resimulation caches will be written to. The filename you type in must contain # signs so each resimulation frame will be written to a differently numbered file. Also, you can choose between two file formats - AUR and VDB cache files.

Delete Cache Files - Clears the resimulation files.

Reset to Default - Resets the resimulation path to default.

Help - Opens [this help page](#).



The screenshot shows the 'Resimulation Cache' panel. It has two main sections. The first section is 'Base Cache Files Path' with a text field containing '\$(same_as_output)' and a button with three dots. Below this, the resolved path is shown: 'aya_test/phxfd_maya_test/data/untitled_Phoenix_frames/PhoenixFDSimulator1_0001.aur'. The second section is 'Output and Render Path' with a text field containing '\$(work_path)' and a button with three dots. Below this, the resolved path is shown: 'aya_test/phxfd_maya_test/data/untitled_Phoenix_frames/PhoenixFDSimulator1_resim_0001.aur'.

You can use the same **Output and Render Path** as the **Base Cache Files Path**, and this way Phoenix will not create a separate cache sequence for resimulation, but will overwrite the base simulation caches instead. It's valid to do so if you need a more complicated setup or when not enough disk space is available. This way you can increase the resolution more and more each time you start a resimulation.

The following error message may appear when you start a re-simulation:

"Cannot start the Re-Simulation! Please make sure the simulation was run with the 'Velocity' channel checked under the 'Output' rollout, and that the cache files in the Simulation Input path exist."

The reason may be that either the files in the Input Simulation Path do not exist at all, or they do not have Grid Velocity Channel exported when you have simulated them beforehand. Of course, you may use more complicated setups where you resimulate over an already resimulated cache file, or you may Load an existing base cache file as the initial state of the re-simulation. These are all possible; you just need to have velocity in the base cache and an existing path to it.