

# Phoenix API

This page provides information on the Chaos Phoenix application programming interface (API).

## Overview

---

The Chaos Phoenix API is included with the installation of Phoenix for Autodesk® 3ds Max®. It provides C++ API for several different purposes:

- Loading of grid and particle data stored in AUR, VDB or F3D cache files.
- Runtime access to the grid volume and particle shading core of a Phoenix Simulator node in 3ds Max, allowing you to read and shade this data in your own plugin.
- Runtime access to different Phoenix nodes, allowing you to prepare them for rendering on demand, start and stop a simulation, access the parameters of different nodes, load and save presets.
- Access to the Phoenix color gradients and diagram curves, allowing you to embed them in your own application.

## Installation

---

The Phoenix API is normally installed in "C:\Program Files\Chaos Group\Phoenix FD\3ds Max NNNN for x64\SDK" where NNNN is the version of 3ds Max (2021, 2020, etc).

## Structure

---

The Phoenix API includes the following folders:

- **include** – Contains the header files needed to interface with Phoenix API.
- **lib** – Contains the Phoenix API binaries for both static and dynamically linked versions of the Phoenix API.
- **samples** – Contains example projects that use different functions of the Phoenix API.

## Using the Phoenix API

---

The Phoenix API is provided as a static and dynamic library. Depending on your project, you may pick the static or dynamic version of the library. Usually the dynamic version is preferred when there is a dependency to any version of V-Ray SDK, as Phoenix API depends on **vutils\_s.lib**.

Using Phoenix API as a static library requires:

- **lib\aurloader\_s.lib** and **lib\vutils\_s.lib** to be added as an additional dependency to the linker.

Using Phoenix API as a dynamic library requires:

- **AURLOADER\_DYNAMIC\_LIB** to be added the compiler settings as a preprocessor definition.
- **lib\aurloader.lib** to be added as an additional dependency to the linker.
- **lib\aurloader.dll** to be available at run time to the executable linked to **lib\aurloader.lib**.

Phoenix API is built with the vc14 **C++ Platform Toolset** for all 3ds Max versions and for both V-Ray Next and V-Ray 5, **with "/MD" Runtime Library flag**.

## Samples

---

The Phoenix API comes with two code sample projects: GridView and CSVParticles.

### Prerequisites:

The project uses CMake for generating project files. Additionally the following third party libraries have been used:

- GLEW (<http://glew.sourceforge.net/>).
- GLFW (<http://www.glfw.org/>) Tested with GLFW Version 3.0.4.

- Zlib (<http://www.zlib.net/>). Needed if static version of Phoenix API is being used.

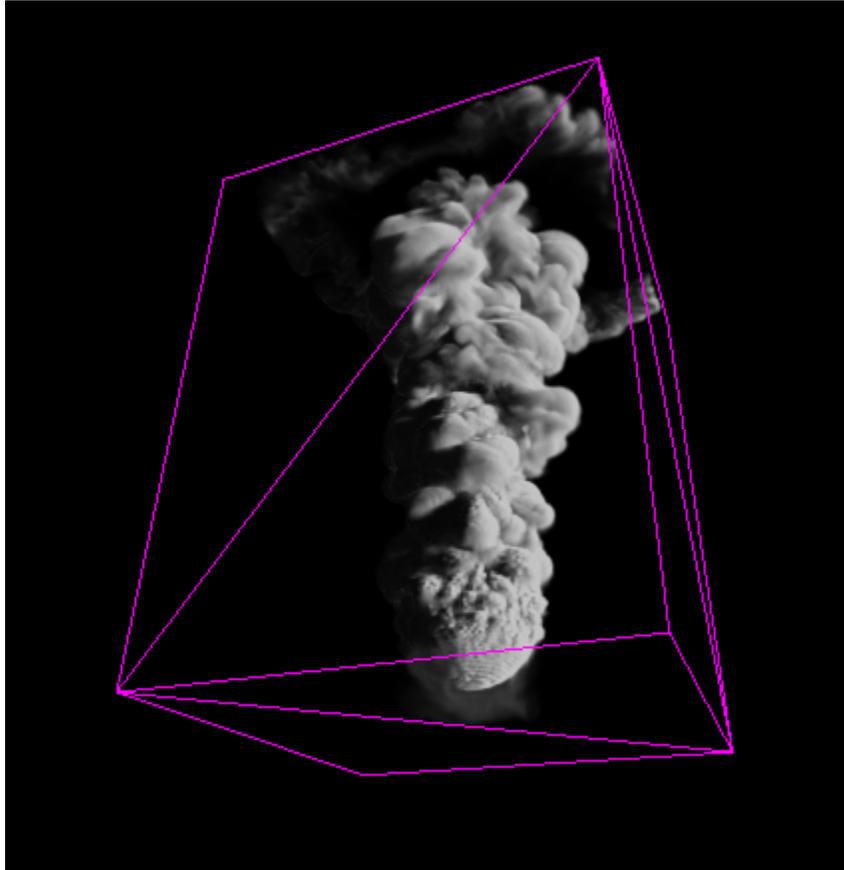
Here is an archive containing those libraries: [external\\_libs](#).

**Note:** This is just a collection of the libraries as we downloaded them from their respective official sites. We don't take any responsibility for the way the actual libraries work or affect your PC.

## GridView

---

GridView is a simple smoke rendering implemented in OpenGL. it is located in the `\samples\GridView` directory.



### Prerequisites:

In order to build this sample, all external libraries must be located in a `GridView/external_libs`.

### Build steps:

- Place all external libraries in `GridView/external_libs`.
- Use CMake to generate project files that best suite you needs. Please take in account the **C++ Platform Toolset** that is used by your version of Phoenix API. See the [Using Phoenix FD API](#) section.
- Set `PHOENIX_SDK_DIR` to Phoenix API, for example "C:\Program Files\Chaos Group\Phoenix FD\3ds Max NNNN for x64\SDK".
- Generate the project files and build.

## CSVParticles

---

CSVParticles exports particle groups stored in Phoenix `*.aur` files to `*.csv` recognized by Thinkbox Krakatoa™ ([CSV File Format](#)).

**Prerequisites:**

In order to build this sample, all external libraries must be located in a **CSVParticles/external\_libs**.

**Build steps:**

- Place all external libraries in **CSVParticles/external\_libs**.
- Use CMake to generate project files that best suite you needs. Please take in account the **C++ Platform Toolset** that is used by your version of Phoenix API. See the [Using Phoenix API](#) section.
- Set PHOENIX\_SDK\_DIR to Phoenix API, for example "C:\Program Files\Chaos Group\Phoenix FD\3ds Max NNNN for x64\SDK".
- Generate the project files and build.