

3 D S M A X · 2 0 2 4 - 2 0 2 7

VanguardFX Liquid

The Beginner's Guide

FROM AN EMPTY VIEWPORT TO MOVING WATER
VERSION 3.99 · VANGUARDFX.PRO

— What is in this guide

Read section 2 and you will have water moving. Everything after that is there for when you want more than that.

1 Before you start — *what you need, and how the licence behaves*

2 Your first simulation — *six steps, about five minutes*

3 The one thing that surprises everybody — *there is no Simulate button*

4 Making it bigger — *resolution, world scale, and why a big tank felt like a glass*

5 Whitewater, foam and spray — *in the order that actually works*

6 The render surface — *turning particles into geometry*

7 Colliders — *making the water hit something*

8 When something looks wrong — *the panel diagnoses itself*

9 A map of the panel — *what every section is for*

1 Before you start

Five minutes of checking now saves an evening of wondering why nothing moves.

YOU NEED

WHY

3ds Max 2024, 2025, 2026 or 2027, 64-bit

The installer places the right build for each version you have. You do not choose.

An NVIDIA graphics card with CUDA

The solver runs on the GPU. It will not run on AMD or on integrated graphics.

A licence — trial or paid

Without one the panel is greyed out and nothing simulates.

Checking the licence before you blame the water

Scroll to the bottom of the panel, to `ABOUT / LICENSE`. Two lines there tell you everything. The first reads `license: License active - N day(s) remaining.` The second is the gate: it must say **OPEN**. If it says `gate: LOCKED`, every slider in the panel is dead and the particle count will read `blocked: license not active`.

To activate, copy the string under `Your HWID (send this to the bot):`, paste your key into `Paste your license key:` and press `APPLY LICENSE KEY`.

A licence belongs to one machine. The HWID is read from your motherboard's firmware. Change the motherboard, or move to a different computer, and the key will be refused — that is not a fault. Send the new HWID to support and it will be reissued. There is no charge for a transfer.

2 Your first simulation

Water falling in a box. Do exactly this, in this order, and it will work the first time.

1 Create the object

In 3ds Max:

Create → Geometry → VanguardFX → VanguardFluid

. Drag one out in a viewport.

This object is the tank. Its six walls are solid, so water poured in stays in. You do not need to build a container.

YOU SHOULD SEE

A wireframe box gizmo in the viewport, and the floating panel opening by itself.

2 Make it small enough to finish in seconds

In **DOMAIN & GRID**, set **Resolution (longest axis)** to **48**

.

This is the one number to change before your first run. Resolution is cells across the longest side, and cell size decides how many particles the fill makes. At the factory setting of 96 the first fill makes roughly 1.9 million particles — a real simulation, but not a five-second one. At 48 the same box makes about 240 thousand, which steps in milliseconds.

3 Press QUICK START

In **START HERE**, press **QUICK START - make particles visible**.

It resets nothing and changes no physics. It turns on the viewport modes that draw individual particles, switches on the object's vertex-colour display, and extends Max's animation range so there are frames to play.

4 Fill the tank

In **RUN**, press **FILL && RESET**.

YOU SHOULD SEE

The box fills with coloured dots, and the status line near the top changes from **particles: 0** to a real number.

5

Press Play — in 3ds Max, not in the panel

Use Max's own timeline play button. `SIM WITH TIMELINE` is on by default and means one solver step per new frame.

YOU SHOULD SEE

The water settle, slosh and come to rest. If the particle count is falling steadily, read section 8.

6

Start again whenever you like

`FILL && RESET` puts you back to frame zero with a fresh tank. Nothing you have set is lost.

3 The one thing that surprises everybody

There is no Simulate button, and that is deliberate. New users hunt for one, do not find it, and conclude the plugin is broken.

The water is stepped by **3ds Max's timeline**. Scrub or play, and the solver advances one step per new frame. Stop, and it stops.

Two settings change that relationship:

CONTROL**WHAT IT DOES**

<code>SIM WITH TIMELINE</code>	On by default. One solver step per frame of the timeline.
<code>LIVE RUN (ignore timeline)</code>	Steps continuously without the timeline moving — for dialling in a look.
<code>RUN OFFLINE SIM (Sequence from - to)</code>	The batch writer: runs the whole range with no viewport drawing and writes straight to disk. For scenes too heavy to watch.

Scrubbing backwards does not rewind the water. A simulation is a chain — frame 40 exists because frame 39 happened. To see it from the start again, press `FILL && RESET`, or cache the frames to disk and play the cache back.

4 Making it bigger

Resolution: detail, and what it costs

`Resolution (longest axis)` is the single dial that decides both how good it looks and how long it takes. Doubling it multiplies the cell count by eight. Find your motion at 48, then raise it.

World scale: why a big tank behaved like a glass of water

This one is worth understanding, because it is the difference between water and an ocean.

Gravity ships as -981 , which is centimetres per second squared. So one scene unit has always been one centimetre, and a 200-unit tank has always been **two metres** of real water — which is why it moved like two metres of real water however large you drew it.

`WORLD SCALE: 1 unit = N cm (1 = bathtub, 10 = open sea)` tells the solver how many centimetres one unit stands for. Set it to 10 and that same box becomes 20 metres across; the solver is handed a scaled gravity so every wave speed and fall time is correct for water that size.

Or press `MAKE THIS AN OCEAN (set world scale from the domain)` and it works the number out from your box.

Waves get slower, and that is right. Raising world scale makes water move more slowly on screen — by the square root of the factor. Large bodies of water genuinely do move slowly; that reading is the whole reason a bathtub never looks like the sea.

5 Whitewater, foam and spray

Six classes of secondary particle. Enabled in the wrong order you get nothing, or a mess. This is the order that works.

1

Get the water right first

Whitewater is born from what the water does. Calm water makes no foam, no matter how the foam dials are set. Make it splash before you ask for spray.

2

Enable whitewater, then leave the dials alone for one run

Play a few frames and read the status line. It tells you how many were born and of which class.

3

Balance foam against splash

Foam spawn should sit
well above

splash spawn. If splash is higher, almost everything is born as spray, foam cohesion has nothing to bind, and you get a haze instead of lace. The panel says so itself when it happens.

4

Lower the threshold for an ocean

The whitewater threshold decides how violent water must be before it foams. The shipped default suits a splash, not a sea. For an ocean the panel recommends 30–50; higher and only breaking crests foam, so the sea looks bare.

Read the doctor. The panel diagnoses its own settings. Look for lines beginning `[FOAM]` — they name the exact control that is fighting you, and the cure, in words. It is faster than guessing, and it is right more often.

6 The render surface

Particles are not geometry. To render water you need a surface built from them: press

BUILD SURFACE MESH.

CONTROL

WHAT IT DOES

Mesh detail (x solver grid)

How fine the surface is, as a multiple of the solver grid. Costs memory and time.

Surface level (lower = fatter)

Where the skin sits. Too high and thin sheets vanish; too low and everything looks swollen.

Method: 0 blobby 1 smooth (ocean/lava)

Blobby suits droplets. Smooth suits oceans and lava.

The mesh and the whitewater render together, and the domain box is not included unless you tick

RENDER THE DOMAIN BOX TOO (off = mesh + whitewater only).

If the mesh has a slice missing, read the **mesh:** status line. It says how many triangles were wanted and how many were lost, and lost triangles mean the card ran out of room — lower **Mesh detail**. It will never clip silently.

7 Colliders

Select the object you want the water to hit, then press **ADD SELECTED OBJECTS** in **COLLISION**. Tick

COLLISION ENABLED.

If collisions look stepped on an angled surface, the cause is that collision happens at the solver's own cell size — a diagonal made of cubes is a staircase. Two controls help:

Solid detail (1 = fluid grid, 4 = 4x finer) raises the collision resolution, and

Grid wall at fill % decides how full a cell must be to count as wall.

8 When something looks wrong

Almost every section ends in a grey status line, rewritten many times a second from what the solver *measured* — not from what the sliders claim. Read it before changing anything.

WHAT YOU SEE	WHAT TO DO
Nothing simulates; sliders greyed out	The licence gate is closed. See section 1.
No foam anywhere	Read the <code>[FOAM]</code> doctor lines. Usually foam spawn sits below splash spawn, or the threshold is too high.
<code>foam bins: 0 binned</code>	Either nothing is tagged as foam, or SURFACE ONLY is discarding it — the line says which.
Mesh has a hole or a flat edge	The <code>mesh:</code> line reports lost triangles. Lower Mesh detail.
Cache will not play	The <code>cache:</code> line names the exact file it tried and why it failed.
A big tank behaves like a small one	World scale. Section 4.

When you need to ask for help

Press `WRITE DIAGNOSTIC LOG (.txt to send)`. It writes a text file describing your licence, your card and its temperature, the particle ledger, the surface state — and a section headed literally “**DOCTOR (what is wrong, in words)**”.

Attach that file to your message at **vanguardfx.pro/support**. It usually turns a week of back-and-forth into one reply.

9 A map of the panel

You do not need most of this to make water. It is here so that when you want something, you know where to look.

SECTION	FOR
RUN	Filling, resetting, and how the sim follows the timeline.
FLUID	How many particles are allowed.
GPU	Which card simulates, and stopping before its memory fills.
START HERE	Quick start, and hover help for every control.
DOMAIN & GRID	Box size, resolution, and world scale.
WAVE MAKER	Waves without extra objects.
SOLVER	Gravity, viscosity, splashiness, iterations.
THERMAL MATERIAL	Lava that cools and crusts; snow and sand that pack.
INFINITE OCEAN	Extends the water to the horizon at render time.
WET MAP	Surfaces remember where the water has been.
AVALANCHE	Snow on terrain: slabs, powder cloud, deposition.
AUDIO LINK	Music drives the water.
MATERIAL SOURCES	A second substance in the same sim.
FORCE MAP	A texture map pushes the particles.
EMITTERS	Objects that pour fluid in.
FORCES	Wind, vortex, turbulence.
PRO EXPORT	One asset per button, for other packages.
OFFLINE SIM	Heavy scenes, straight to disk.
FIRE & SMOKE	Embers and smoke from hot fluid.
SURFACE MESHING	The renderable water surface.
PRESETS	One press: water, ocean, lava, and 52 materials.
ABOUT / LICENSE	Your licence, your HWID, and the diagnostic buttons.

