

AQUAS

Water Set for Mobile, Web & Desktop

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Introduction

Thank you for purchasing AQUAS! This package contains a broad range of water shaders for different purposes and performance levels on mobile devices, web and desktop games. AQUAS is a set of nine shaders, all of which have been developed to serve a certain purpose and fit to different environments. Every shader is highly customizable and can be adjusted to any type of game and setting. This makes AQUAS a versatile, low-priced and high quality solution for your game development process.

This manual provides all necessary information to get started. The first part gives you an overview over the different shaders and the parameters used to customize them. The second part will quickly guide you through the process of setting up under water camera effects and the third part will provide some additional information on the current version and future Updates.

IMPORTANT: Please note, that this package has been created and is only guaranteed to work with Unity 5.3.0 or higher. It might work with lower versions as well, but has not been tested with such.

Setting up AQUAS

After you imported AQUAS, you should see the following folders in your project manager:

```
..\AQUAS
  -\3rd Party Assets
    --\Standard Assets
      ---\Characters
        ----\FirstPersonController
          -----\Audio
          -----\Prefabs
          -----\Scripts
      ---\CrossPlatformInput
      ---\Utility
  -\Demo
    --\Scripts
    --\Textures
  -\Materials
  -\Models
  -\Prefabs
  -\Scripts
  -\Shaders
    --\Camera Effects
    --\Water
      ---\Desktop&web
      ---\Mobile
  -\Textures
    --\Normals
```

This Chapter will give a quick overview over the shaders, their individual features and their parameters. Setting up AQUAS shaders works as it does with any other material. First create a new material. Add the **waterPlane.prefab** to you scene and position it. Drag & drop the material you just created on the water plane. The material will show up in the water pane's inspector. Select the shader, you want to use. The package contains some ready-made materials, that you can find in the **Materials** folder. You might want to use them as an orientation for customizing your own shaders, or simply use them. It is recommended however, that you don't change their parameters, without making backup copies of them.

IMPORTANT: Attach the **AQUAS_Camera** script to your camera, to make sure, depth rendering is enabled on all platforms and quality levels.

Shaders

The following shaders are available:

AQUAS

Camera Effects

Under Water

Wet Lens

Desktop and web

Double-Sided

Double-Textured

Single-Textured

Triple-Textured Bumpy

One-Sided

Double-Textured

Single-Textured

Mobile

Bicolored

Bicolored Foamy

Single-Colored

Single-Colored Foamy

Here's a quick overview over the individual differences between the shaders:

- Mobile shaders don't actually refract light. Looking through the transparent part won't distort what is beneath the surface. This is due to performance reasons on mobile devices.
- The shaders for web and desktop absorb light and thus have a depth-based color as water does in reality. Since this is very performance intensive on mobiles. Instead the mobile shaders work with either one color for the entire water or two colors, one for deep and one for shallow water, depending the target device's performance.
- Mobile shaders are available with and without foam, depending on the target device's performance.
- The triple textured shader uses 3 normal maps for a realistic surface and is best suited for lively waters like oceans. The other shaders are best suited for quiet waters like ponds and lakes, but can also be used in an ocean environment.
- The tiling of the normal textures and the foam textures is not relative to the size of the water plane. Once set, the size of the waves will be constant even if you change the size of the water plane.
- Some parameters have the same effect in all shaders. Higher quality shaders usually have additional parameters for higher customizability.

Parameters

This chapter gives you an overview of all parameters in all shaders. Some of them are not available in certain shaders and some are available in all of them. The following overview should help you customize your water.

Parameter	Function
Normal Texture	Sets the normal map for the shader
Small Waves Texture	Sets the normal map for small waves (only double- and triple-textured shaders)
Medium Waves Texture	Sets the normal map for small waves (only triple-textured shader)
Large Waves Texture	Sets the normal map for small waves (only double- and triple-textured shaders)
Normal Tiling	Sets the tiling of normal maps
Small Waves Tiling	Sets the tiling of normal maps per map for small waves (only double- and triple-textured shaders)
Medium Waves Tiling	Sets the tiling of normal maps per map for small waves (only triple-textured shader)
Large Waves Tiling	Sets the tiling of normal maps per map for small waves (only double- and triple-textured shaders)
Offset (Small/Big+Small)	Blends two normal maps with each other (double textured shader only)
Offset (Small/Big+Small/Big)	Blends two normal maps with each other (double textured shader only)
Main Color	Color that is being absorbed.
Deep Water Color	Darkest water color
Shallow Water Color	Sets the color of shallow water (bicolored mobile only)
Shallow-Deep-Blend	Sets the blending between the colors for deep and shallow water (bicolored mobile only)
Shallow-Deep-Fade	Sets the fading between the colors for deep and shallow water (bicolored mobile only)
Fade	Defines how quickly color is absorbed (Web & Desktop only)
Density	Defines the intensity of the color absorption (Web & Desktop only)
Depth Transparency	Sets the depth based transparency
Shore Fade	Sets the transparency fade between zero level and the deepest point at which the water is still transparent
Shore Transparency	Softens sharp edges at shore
Wave Blend	Blends certain waves out at shore (triple textured shader only)
Wave Fade	Fades certain waves out at shore (triple textured shader only)
Enable Reflections	Enables/Disables reflections
Reflection Intensity	Sets the reflection intensity
Distortion	Sets the reflection distortion

Specular	Sets the specularity
Specular Color	Sets the specular color (except for the triple textures shader – this one uses the light color as specular color)
Gloss	Sets the gloss
Light Wrapping	Sets the light wrapping
Refraction	Sets the refraction (mobile shaders only have a "pseudo-refraction")
Small Wave Refraction	Per-texture refraction (only double- and triple-textured shaders)
Medium Wave Refraction	Per-texture refraction (only triple-textured shaders)
Large Wave Refraction	Per-texture refraction (only double- and triple-textured shaders)
Wave Speed	Sets the wave speed
Small Waves Speed	Per-texture wave speed (only double- and triple-textured shaders)
Medium Waves Speed	Per-texture wave speed (only triple-textured shaders)
Large Waves Speed	Per-texture wave speed (only double- and triple-textured shaders)
Emissive Color	Sets the emissive color (single-colored mobile only) – can be used for things like lava
Emission Intensity	Sets the emission intensity (single-colored mobile only)
Foam Texture	Sets the foam texture
Foam Tiling	Sets the foam tiling
Foam Blend	Sets the foam blend from shore
Foam Visibility	Sets the foam visibility (0 = only water is visible, 1 = only foam is visible)
Foam Color	Sets the foam color
Foam Intensity	Sets the foam intensity
Foam Contrast	Sets the foam contrast
Foam Speed	Sets the foam Speed
Foam Dist. Fade	Sets the distance based tiling to avoid visible tiling at larger distances (only double- and triple-textured shaders)
Foam Dist. Falloff	Sets the falloff for the distance base tiling (only double- and triple-textured shaders)
Underwater Mode	Switches to underwater mode (double-sided shaders only - Manual switching is usually not required, the parameter is accessed via script)
Underwater Transp. Dist.	Sets the distance based transparency for underwater mode (double-sided shaders only)
Underwater Transp. Falloff	Sets the falloff for the distance based transparency (double-sided shaders only)

IMPORTANT: Use the pre-made materials as an orientation, if you're not sure about certain values.

Underwater Effects

Setting up underwater effects is very easy with AQUAS. First you need to make sure, that you're using a double sided water shader. Once you have your water set up, simply attach the **UnderwaterCameraEffects.prefab** to the main camera gameobject. Make it a child object of your camera, and make sure, its local position is at **(0,0,0)**. All you have to do now, is adjust some of the prefab's parameters.

Select the **UnderwaterCameraEffects.prefab** and add the missing parameters in the inspector:

Parameter	Function
Water Level	Sets the y-value for the water surface. Underwater effects will trigger below that line
Main Camera	Drag and drop your camera here
Water Lens	Set the Water Lens (shouldn't need to be changed)
Air Lens	Set the Air Lens (shouldn't be changed)
Run Down Duration	Sets the time it takes for the water to run down the lens after diving up
Fog Color	Sets the color of the underwater fog (should match the deep water color)
Fog Density	Sets the fog density (and the vision)
Default Fog Density	Sets the fog density when not underwater (0 if no fog)
Default Fog Color	Sets the fog color when not underwater
Water Plane	Drag and drop the waterplane here

If you expand the **UnderwaterCameraEffects.prefab**, you'll see, that it has two child objects, **WaterLens** and **AirLens**. Those are basically planes with shaders on them, that are right in front of your camera. If the **Viewport Rect** of your camera is not **(1,1)**, you might have to change the size of the **AirLens** and **WaterLens**, to have it cover your field of view entirely. The **WaterLens** is active whenever you go below the water surface, the **AirLens** is active, whenever you are above it. Both lenses have shaders on them, that you can customize.

WaterLens Parameters

Parameter	Function
Distortion Texture	Sets the distortion texture (default is an alpha ellipse)
Distortion Intensity	Sets the distortion intensity underwater
Distortion Speed	Sets the speed of the rotating distortion

AirLens Parameters

Parameter	Function
Main Color	Sets the main color (use the same as for fog)
Rundown Texture	Sets the distortion texture for the wet lens
Rundown Speed	Sets the speed at which water runs down the lens

Additional Information

- The current version of AQUAS is v1.0
- The scripts used in this package are as complete as they can be without limiting you in the way you design your game, they are not enclosed though. You're free to edit all included scripts to make it fit your exact needs
- Features to be added with future updates in the following order:
 - Sound effects
 - Caustics
 - Splashing particle effects
 - Non-linear water waves
 - Floating dynamics

For video tutorials on the use of AQUAS, please visit the following link:

<https://dogmaticgames.wordpress.com/products/aquas-water-shader-set/tutorials/>